hp StorageWorks
SSL1016 tape autoloader

This guide provides step-by-step instructions for installation, and is a reference for operation, troubleshooting, and upgrades.

invent

SSL1016 Tape Autoloader Reference Guide
Fourth Edition (June 2003)
Part Number: 272363-004

contents

about this guide

This reference guide provides information to help you:

- Install and configure the autoloader
- Properly use and maintain tape cartridges
- Operate the autoloader
- Troubleshoot the autoloader
- Upgrade or replace Customer Replaceable Units

About this Guide topics include:

- Conventions, page 10
- Rack Stability, page 12
- Getting Help, page 13

Conventions

Conventions consist of the following:

- Document Conventions
- Text Symbols
- Equipment Symbols

Document Conventions

The document conventions included in Table 1 apply in most cases.

Table 1: Document Conventions

Element	Convention
Cross-reference links	Figure 1
Key and field names, menu items, buttons, and dialog box titles	**Bold**
File names, application names, and text emphasis	Italics
User input, command and directory names, and system responses (output and messages)	Monospace font COMMAND NAMES are uppercase monospace font unless they are case sensitive
Variables	*<monospace, italic font>*
Website addresses	Underlined sans serif font text: http://www.hp.com

Text Symbols

The following symbols may be found in the text of this guide. They have the following meanings.

⚠️ **WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

> **Caution:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

> **Note:** Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment Symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings.

Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack Stability

Rack stability protects personal and equipment.

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- In single rack installations, the stabilizing feet are attached to the rack.
- In multiple rack installations, the racks are coupled.
- Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.

Getting Help

If you still have a question after reading this guide, contact an HP authorized service provider or access our website: http://www.hp.com.

HP Technical Support

In North America, call technical support at 1-800-652-6672, available 24 hours a day, 7 days a week.

Note: For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call technical support at the nearest location. Telephone numbers for worldwide technical support are listed on the HP website under support: http://www.hp.com/support.

Be sure to have the following information available before calling:

■ Technical support registration number (if applicable)

■ Product serial numbers

■ Product model names and numbers

■ Applicable error messages

■ Operating system type and revision level

■ Detailed, specific questions

HP Storage Website

The HP website has the latest information on this product, as well as the latest drivers. Access storage at: http://www.hp.com. From this website, select the appropriate product or solution.

HP Authorized Reseller

For the name of your nearest HP authorized reseller:

■ In the United States, call 1-800-345-1518

■ In Canada, call 1-800-263-5868

■ Elsewhere, see the HP website for locations and telephone numbers: http://www.hp.com.

Overview

1

The HP StorageWorks SSL1016 Tape Autoloader provides a compact, high-capacity, low cost solution for simple, unattended data backup. The autoloader supports one DLT1, SDLT 320, or Ultrium 460 tape drive and two removable magazines. Each magazine can accommodate up to eight cartridges.

Front View

The mailslot, LCD, function keys, status LEDs, On/Off button, and left and right magazines are visible on the front panel of the autoloader.
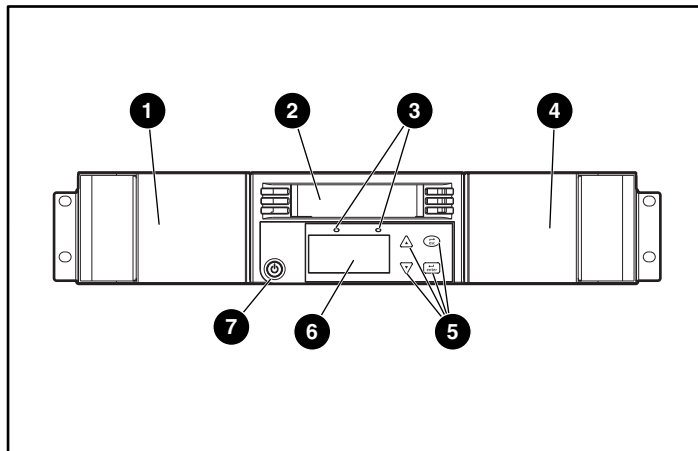
Figure 1: Autoloader front view

❶	Left magazine	❺	Function keys
❷	Mail slot	❻	LCD
❸	Status LEDs	❼	On/Off button
❹	Right magazine		

Mailslot

The autoloader has a manual entry port, the mailslot, which allows you to load or unload a single cartridge. To maintain security, the mailslot can be password protected. Provided that the tape drive is empty, a cartridge can be inserted in the mailslot even if both magazines are completely filled.

LCD

The LCD allows you to use the scrolling menu to perform diagnostics and to enter commands.

Function Keys

The function keys allow you to move through the scrolling menu and to make selections.
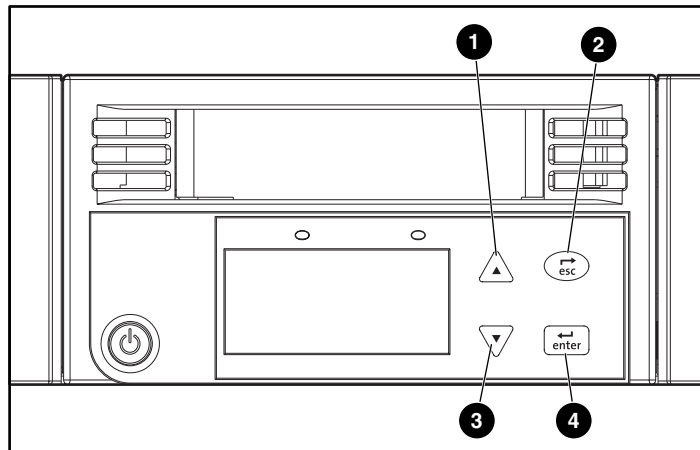
Figure 2: Function keys

❶   △ Scroll up. Press to move through a menu or number series.

❷   ⟲esc Escape. Press to return to the previous menu or to move backwards on a screen.

❸   ▽ Scroll down. Press to move through a menu or number series.

❹   enter Enter. Press to select an option.

Status LEDs

The status LEDs show autoloader and drive status information. The left, green LED shows ready status information, and the right, amber LED shows fault status information.

On/Off Button

The On/Off button is a soft key, which means that if the autoloader is moving any cartridges when you press the On/Off button, it finishes moving them before powering off. However, any other functions, such as writing to a tape or performing a diagnostic test are interrupted and terminated when you press the On/Off button.

Magazines

The magazines contain part of the robotics that move the cartridges inside the autoloader. The autoloader is equipped with two cartridge magazines. The magazines are removable, and each magazine accommodates up to eight cartridges. The magazines store your data tape cartridges and can also store your cleaning cartridge.
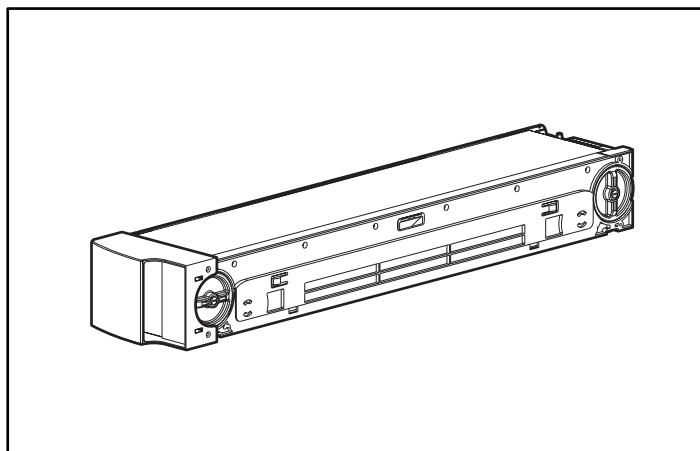
Figure 3: Magazine

Rear View

The fans and connection ports are visible on the back of the autoloader.
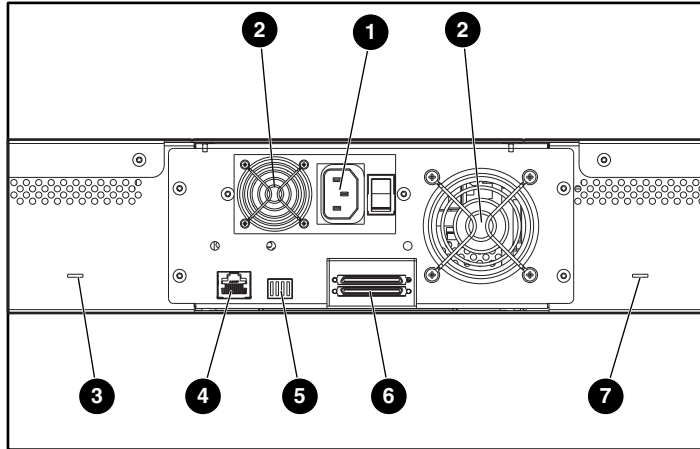
Figure 4: Autoloader rear view

❶	AC power plug	❺	Switches (factory use only)
❷	Fan	❻	SCSI connectors
❸	Manual magazine eject slot	❼	Manual magazine eject slot
❹	Ethernet connector		

Cooling Fans

The autoloader has a system cooling fan, plus a second fan to cool the power supply. These fans maintain the acceptable temperature range for the tape drive path and all internal electronics. See Appendix C, "Specifications," for details about required specifications.

AC Power Plug

The autoloader requires a 110/220 volts AC power connection.

Ethernet Connection

The ethernet connection lets you connect the autoloader to a network, enabling remote administration. Via the network, the autoloader can access an SNMP server and a Simple Network Time Protocol (SNTP) time server. The ethernet connection supports File Transfer Protocol (ftp) and Hyper Text Transfer Protocol (http). You can download firmware updates using ftp and perform administrative tasks, including diagnostics, using http.

SCSI Connection

The autoloader supports both low-voltage differential (LVD) and single ended (SE) connections, however, data transfer rates and SCSI cable lengths will be reduced if an SE connection is used on an SSL1016 with an SDLT 320 drive. An LVD connection is recommended for the SSL1016 with an SDLT 320 drive.

For best performance, an LVD connection using an Ultra3 adapter is recommended for the Ultrium 460 drive.

A 68-pin VHDCI connector links the autoloader to the external host server. A second VHDCI port is used for termination or to connect another SCSI device. If other SCSI devices will be sharing the bus, make sure that SCSI cable length limits are not exceeded and that the other devices will not impact the performance of the tape drive by utilizing too much of the bandwidth.

Note: Adding a SE device to an LVD bus causes the entire bus to operate at SE speeds and with SE cable length requirements.

DCA Switches

The switches on the back of the drive carrier assembly (DCA) have no user function at this time.

Internal View

Figure 5 shows the internal components of the autoloader. The picker sits behind the front panel and mailslot, and can accept and eject cartridges from the mailslot, magazines, and tape drive. The drive carrier assembly (DCA) contains the tape drive, internal power supply, controller board, and cooling fan; it can be removed and replaced as a single component.
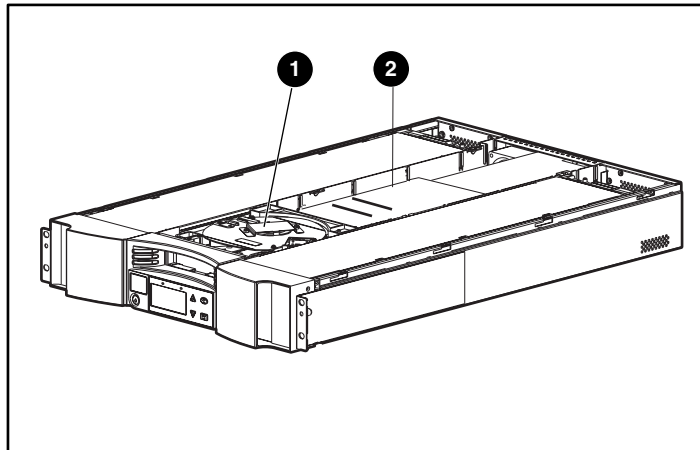
Figure 5: Autoloader internal view

❶ Picker
❷ Drive carrier assembly

Picker

The picker moves the cartridges from one location to another. One motor rotates the picker platform to position the picker arm in front of the drive, mailslot, or desired magazine. Another motor positions the picker arm to retrieve or replace the cartridge. The rotation motor engages the arm on a notch of the cartridge, and the translation motor moves the cartridge from the picker to the drive (or magazine or mailslot) or from the drive (or magazine or mailslot) to the picker.

DCA

The drive carrier assembly (DCA) is configured with one DLT1, SDLT 320, or Ultrium 460 tape drive, depending on the model. The DCA facilitates the easy removal of the drive. To change tape drives, you can replace the DCA without having to remove the top cover of the autoloader.

Barcode Reader

The barcode reader provides inventory feedback to the host application and/or LCD panel by reading the cartridge barcode labels. The autoloader stores the customized inventory data in its non-volatile memory.

For best performance, HP recommends using only HP barcode labels:

- Part number C9240-67903 for DLT or SDLT cartridges
- Part number C7970B for Ultrium data cartridges

Supported Software

The autoloader supports most major operating systems and is also compatible with most popular backup software applications.

Note: Information on specific supported operating systems and backup applications can be found at http://www.hp.com and at vendor websites.

Installation and Configuration

2

Preparation

Make sure that the work area is free from conditions that could cause electrostatic discharge (ESD). See Appendix B, "Electrostatic Discharge," for additional information. You will need a #2 Phillips screwdriver for rackmount installations.

SCSI Bus Requirements

The autoloader contains a SCSI interface that supports both Single Ended (SE) and Low Voltage Differential (LVD) communication, however, data transfer rates and SCSI cable lengths will be reduced if an SE connection is used. The autoloader is not compatible with a High Voltage Differential (HVD) SCSI bus.

The following SCSI host adapter cards are currently supported on the autoloader:

Table 2: Supported Adapters

Adapter	DLT1	SDLT 320	Ultrium 460
64-bit/66 MHz Dual Channel Wide Ultra3 SCSI adapter (LVD)	yes	yes	yes
64-bit/66 MHz Single Channel Wide Ultra3 SCSI adapter (LVD)	yes	yes	yes
64-bit Dual Channel Wide Ultra2 SCSI adapter (SE and LVD)	yes	yes	no

Note: For best performance, an LVD connection is recommended.

The following cables are shipped with your autoloader:

- 68-pin VHDCI connector to 68-pin VHDCI connector 3 foot (.092 meter) cable

- 68-pin VHDCI connector to 68-pin VHDCI connector 6 foot (1.83 meter) cable

- 68-pin VHDCI connector to 68-pin HD connector 6 foot (1.83 meter) cable

SCSI Cable and Terminator Requirements

If the autoloader is the last device on the SCSI bus you must attach a terminator to the SCSI connector on the back panel of the autoloader. There must be a terminator on each end of the SCSI bus. Typically, the host adapter provides the front-end termination.

SCSI Cable Length

LVD SCSI configurations have a maximum allowable bus length of 39.4 feet (12 meters). To determine the cable length of the bus, measure the lengths of the SCSI cables connecting each device to that bus and add those lengths together for the total length. To that total length, add 16 inches (40.64 cm) for the internal SCSI cable length used in the autoloader.

Accessories

The following accessories are shipped with each autoloader:

- Installation poster
- SCSI cable(s)
- RJ-45 Ethernet cable, 10 foot (3.048 meter)
- SCSI terminator
- Hardware brackets and handles to rackmount the autoloader
- Standalone configuration hardware
- Two magazines
- 1 data cartridge
- Power cord
- Rackmount template

■ Documentation CD (documents in PDF format)

Installation Location

⚠ **Caution:** To prevent damage to the tapes and the tape drives, position the autoloader so that no cooling vents are located directly in front of the unit; this helps minimize the amount of foreign debris entering the tape path.

Choose a location that meets the following criteria:

■ Room temperature: 10ºC to 35ºC (50ºF to 95ºF)
■ Power source:
    — AC power voltage: 100 V to 127 V or 200 V to 240 V
    — Line frequency: 50 Hz to 60 Hz
■ Air quality: Minimal sources of particulate contamination. Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, and smoke filled rooms. Avoid placing the autoloader near printing machines as airborne ink contaminates tape drives.

Note: Excessive dust and debris can damage tapes and tape drives.

■ Humidity: 20% to 80% relative humidity (non-condensing)
■ Front Clearance: about 2 inches (about 5 cm) from rack door; about 6 inches (about 15 cm) from wall or solid object; about 12 inches (about 30 cm) to insert a cartridge in the mailslot, and about 28 inches (about 71 cm) to insert or remove a magazine.

Required Tools and Hardware for Rackmount Installation

You need a Phillips screwdriver to install your autoloader into a rack.

Make sure you have all the necessary parts you need before you begin installation. You need the following parts:

- 8 clip nuts, plus four additional clip nuts (included with your rack) if using the optional installation rails
- 2 U-channel brackets with spring clips
- 2 rear support brackets
- 8 rear support bracket screws
- 8 mounting screws (plus four additional mounting screws if using the optional installation rails)
- Rack template

Rackmounting

⚠️ **WARNING:** It takes two people to safely rackmount your autoloader.

⚠️ **WARNING:** Before you begin, make sure that the rack is sufficiently stable. If provided, lower the rack leveler feet and make sure any required stabilizers are installed. If provided, extend the rack anti-tip device. Failure to extend the anti-tip device could result in personal injury or damage to the tape autoloader if the rack tips over.

⚠️ **Caution:** Do not remove the top cover of the autoloader during the installation process. Removing the top cover could result in damage to the autoloader. It also causes the autoloader chassis to bow and prevents correct installation.

⚠️ **Caution:** Make sure that the rack and all equipment mounted in the rack have a reliable ground connection. Verify that the total current of the rack components does not exceed the current rating of the power distribution unit or outlet receptacles.

To rackmount the autoloader:

1. Use the template that shipped with the library to mark the location of the clip nuts and mounting hardware on the mounting rails of the rack.
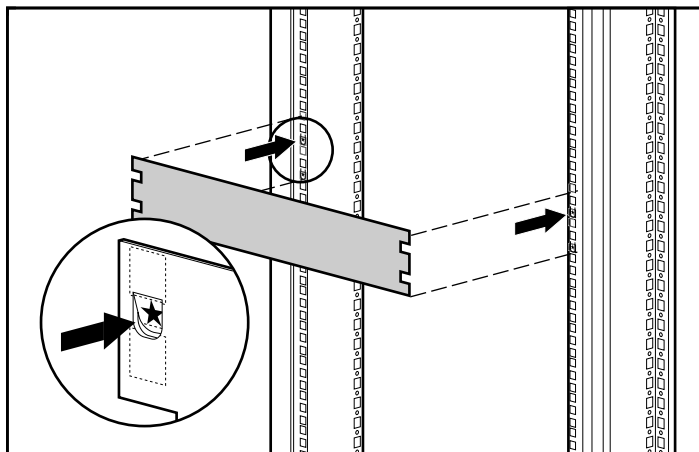
Figure 6: Measuring with the rack template

2. Install two clip nuts into each front rail of the rack in the hole locations marked using the template.

3. Install two clip nuts into each back rail of the rack in the hole locations marked using the template.

4. If there are no devices installed below the autoloader, use the optional installation rails to help support the autoloader during installation:

   a. Install four clip nuts at the front of the rack, two on each rail. Install the first clip nuts two holes below the bottom autoloader clip nut. Install the second clips nuts two holes below the first clip nuts.

   b. Insert one optional mounting rail into the rack with the support ledge facing in.

c.   Hook the curved tabs around the rear rail of the rack ❶.

d.   Align the rail so that the holes are over the previously installed clip
     nuts ❷.

e.   Secure with two screws ❸.

f.   Attach the other optional mounting bracket using steps b through e.
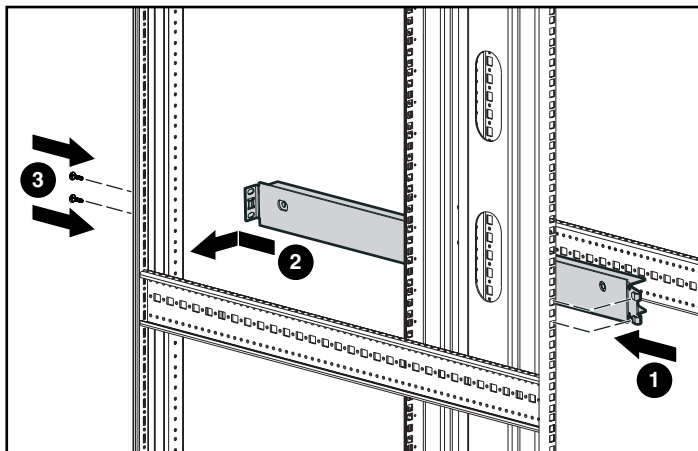
Figure 7: Installing the optional installation rails

5. Attach the two support brackets to the rear of autoloader, tightening screws until snug.

⚠️ **Caution:** Be sure the support brackets are aligned straight with the sides of the autoloader for proper installation into the U-channel brackets.
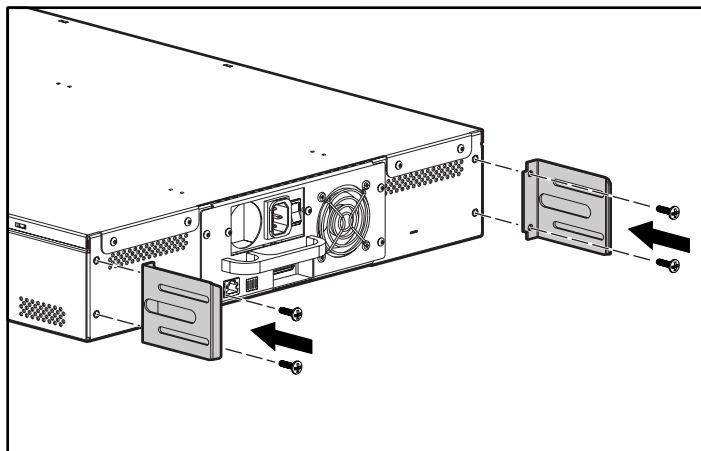
Figure 8: Attaching the autoloader support brackets

6. Attach the two rackmount handles ❶ to the front of the autoloader, tightening the studs ❷ until snug.
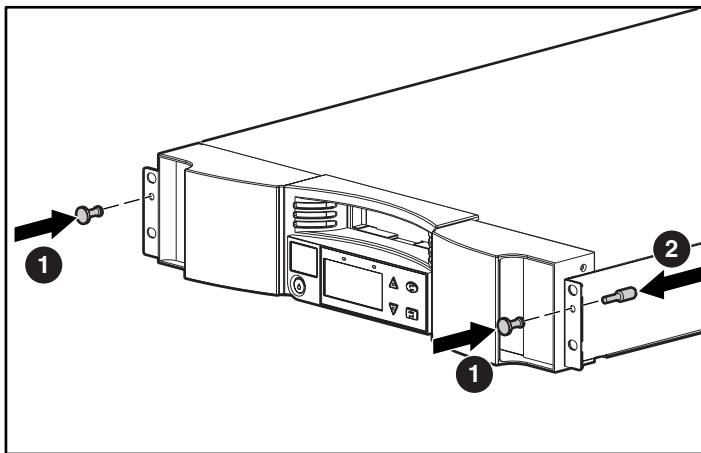
Figure 9: Attaching the front rackmount handles

7. Attach one U-channel bracket to each rear rail of the rack, loosely installing the screws through the clipnuts. (Attach the side of the bracket with only two holes.) Do not tighten the screws.
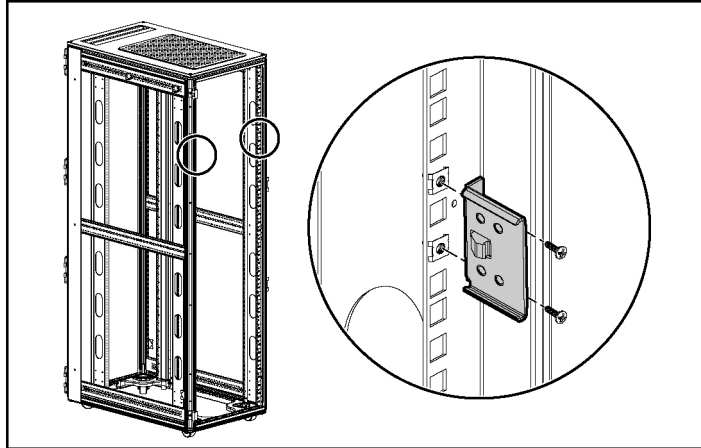
Figure 10: Attaching the U-channel brackets to the rack

8. Position the autoloader in the rack so that each support bracket rests on a U-channel bracket. Each support bracket slides along the lip of the U-channel bracket.
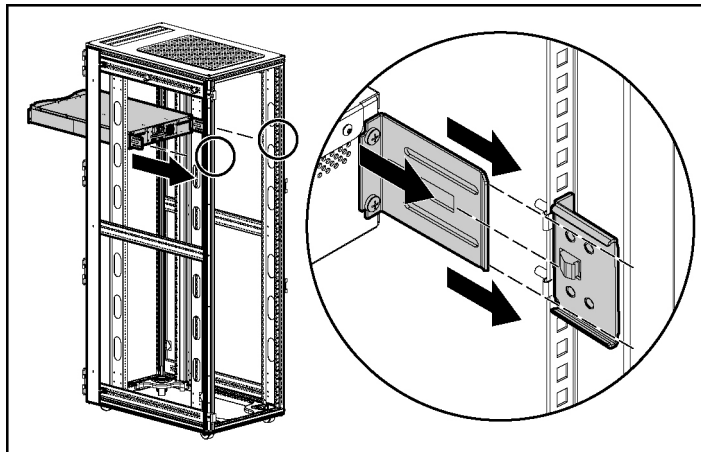
Figure 11: Positioning the autoloader in the rack

9. Slide the autoloader in place ❶ so that:

   a. The mounting studs on the front ears of the autoloader slide into the holes between the clip nuts.

   b. The front ears of the autoloader align with the front clips.

   c. The rear support brackets engage the locking tab on the rear U-channel brackets.
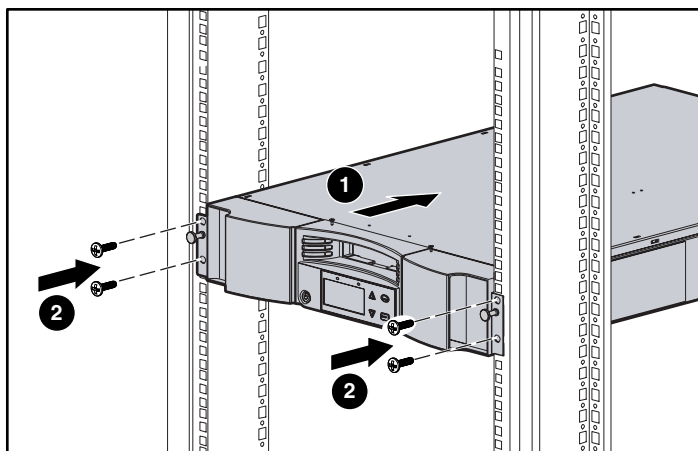
Figure 12: Attaching the autoloader to the front of the rack

10. Loosely install a screw in each front clip nut to attach the ears ❷.

11. Verify that the autoloader is level. Adjust as needed.

12. Tighten the four screws that attach the ears to the front clip nuts.

13. Tighten the four screws that connect the U-channel brackets to the rear clip nuts.

14. Install and tighten the four screws that connect the support brackets to the U-channel brackets.
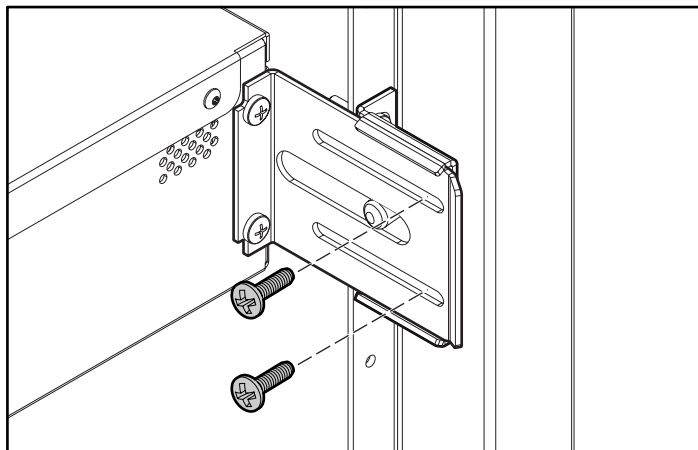
Figure 13: Rear U-channel bracket screws

15. If additional products are going to be installed below the autoloader, remove the optional installation brackets:

    a. Remove the two screws securing each bracket to the front of the rack.

    b. Pull the bracket forward and down, then push back to release the rear tabs.

    c. Remove the rail from the rack.

> ⚠ **Caution:** To avoid personal injury or damage to the equipment, be sure that the optional installation brackets or other properly installed rack products are in place below the autoloader at all times.

Note: Be sure to save the optional installation brackets in a safe place for use if the autoloader needs to be removed.

Removing the Autoloader From the Rack

When removing the autoloader from the rack:

- Always use at least two people.
- Install the optional installation brackets if there is no device installed below the autoloader.
- Before powering off the autoloader, remove the magazines.

Standalone Installation

Use these instructions if you will not be installing your autoloader into a rack.

Preparation

To prepare your autoloader for standalone installation:

1. Place one rear standalone leg into place and secure with two screws. Repeat for the other side.
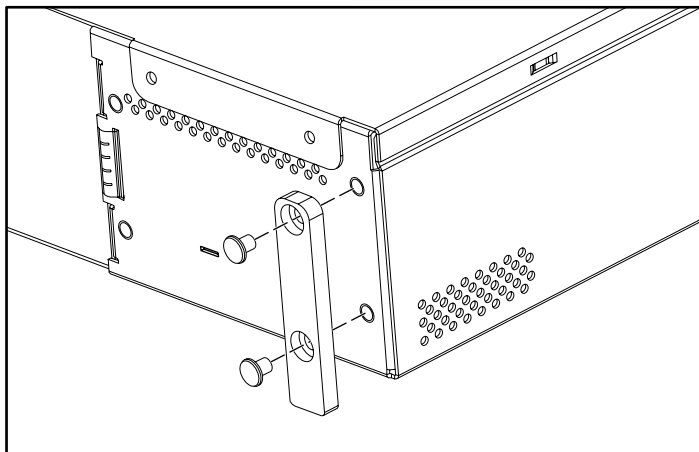
Figure 14: Installing the rear standalone leg

2. Install the front standalone bracket cover:

    a. Place the cover over the autoloader bracket.

    b. Place the washers over the bracket holes and secure with a screw.

    c. Repeat for the other side.
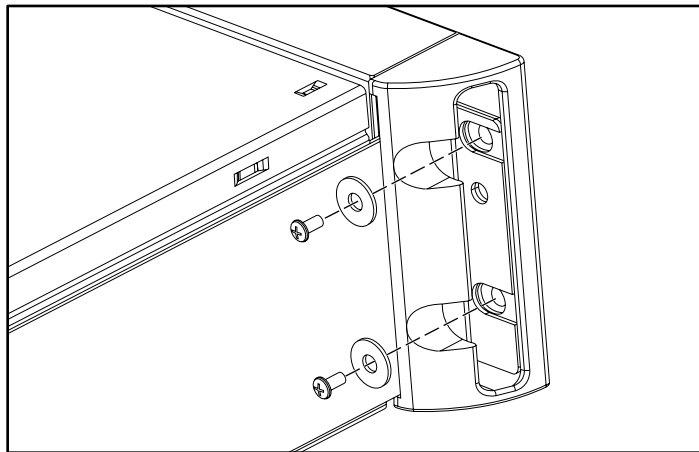
Figure 15: Installing the front standalone bracket covers

Clearance

Place the autoloader on a desk, table, or other stable, horizontal surface. Make sure the fan at the rear of the autoloader is not obstructed. Allow about 6 inches (about 15 cm) from wall or solid object at the rear. Allow about 12 inches (about 30 cm) to insert a cartridge in the mailslot, and about 28 inches (about 71 cm) to insert or remove a magazine at the front.

SCSI Connection

The SCSI connection lets the host computer communicate with the autoloader.

Note: If you do not already have a compatible and available SCSI HBA installed in the host computer, install one before proceeding.

⚠ **Caution:** When installing cables, be careful not to damage the SCSI pins on the connectors. Damaged pins will cause the connection to fail.

To make the SCSI connection:

1. If the host computer is connected to a network, check with the system administrator before turning off power.

2. Properly power off all peripheral devices connected to the host computer.

3. Power off the host computer.

4. Install the supplied 68-pin 6 foot (1.83 meter) SCSI cable to the double-stacked SCSI connector that is on the back of the DCA and tighten the screws. You can install the SCSI cable in either port.

Note: Use an appropriate cable that matches your host connector.
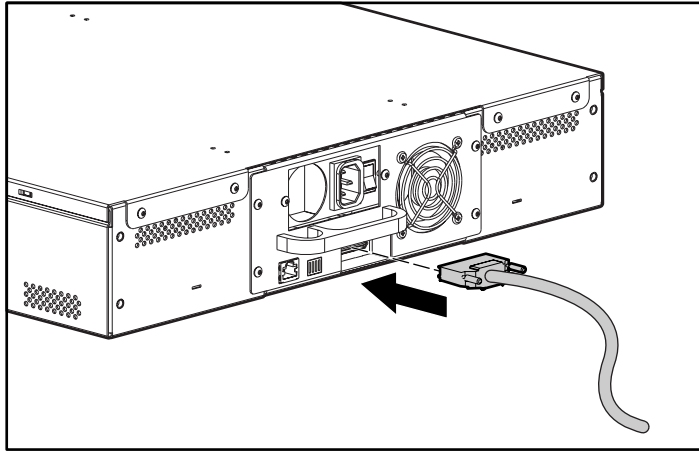
Figure 16: Attaching the cables

Note: The connector on the end of the cable is offset. Make sure that you install it with the correct orientation so that you can fit a terminator or another cable in the other port.

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5. If the autoloader will be the last device on the SCSI bus, install the supplied SCSI terminator to the remaining port that is on the DCA and then tighten the screws.

6. Attach the other end of the SCSI cable to the SCSI host adapter card using the appropriate cable.

7. Power on any peripheral devices you powered off in Step 2.

Note: Do not power on the host computer at this time. You must first configure the autoloader.

Daisy Chaining

The autoloader does not support daisy chaining with other products. You can daisy chain one additional autoloader using the 68-pin VHDCI connector to 68-pin VHDCI connector 3 foot (.092 meter) cable. You must then install a terminator on the second autoloader.

Ethernet Connection

Attach one end of the RJ-45 cable to the autoloader. Attach the other end to a 10/100 hub or switch.

Note: This step is not required for operation, but is necessary if you want to use the autoloader Web administration feature.

Power On

Carefully inspect your power cord and make sure that it is the correct one for your country or region. If the power cord is not correct, contact your customer service representative.

To connect the power cord:

1. Make sure that the power switch on the back of the autoloader is off (the 0 is pressed).
2. Connect the female end of the power cord to the power connector on the back of the autoloader.
3. Plug the male end of the power cord into the power source.
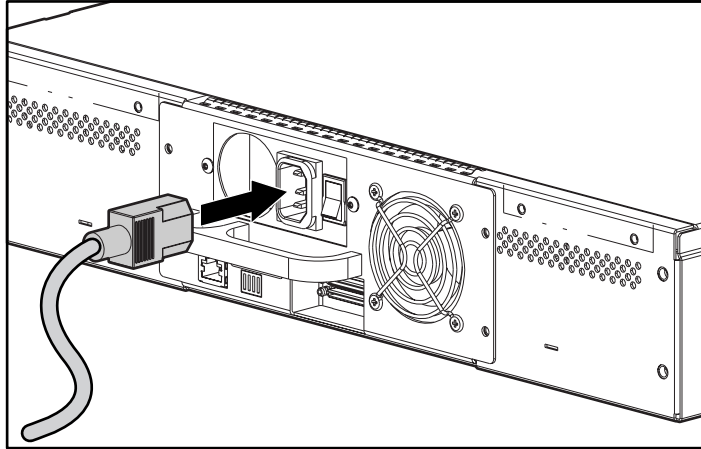
Figure 17: Connecting the power cord

Note: Do not power on the host before powering on the autoloader.

To power on the autoloader:

1. Push the power switch that is on the back of the autoloader to the on position (the | is pressed).

    Wait while the autoloader performs its power-on sequence. During this time, the following activities occur:

    ■ The cooling fans begin to operate.

    ■ The LCD illuminates and displays power-on messages.

    ■ The autoloader performs a power-on self-test (POST).

    ■ The autoloader performs a calibration and magazine element status.

Note: Depending on how the autoloader was last powered off, you may need to press the On/Off button on the front of the autoloader.

Verification

When you first power on the autoloader, it automatically runs a Power On Self Test (POST). During the POST, the right (amber) LED flashes rapidly. After the POST, the left (green) LED illuminates steadily, and after approximately three minutes the LCD displays the HP logo and drive type. Do one of the following:

■ If the autoloader powers on successfully, continue configuring the autoloader. See "Configuration."

■ If the autoloader does not power on successfully, make sure that:

— The rear power switch is on.

— The power cord is inserted correctly.

— The SCSI bus is terminated.

— The SCSI cable is connected to the autoloader and host computer.

— The On/Off button on the front of the autoloader has been pressed.

— There is not an error code displayed on the autoloader's LCD. (If an error message is displayed, see Chapter 6, "Troubleshooting.")

If you cannot resolve the problem yourself, contact your authorized service representative.

Configuration

To configure your autoloader, use the Configuration submenu on the front panel. When you first power on the autoloader, it defaults to no password protection. After you set the security option, however, all the configuration functionality is password-protected; you need an administrator-level password to configure the autoloader.

The Configuration submenu has the following options:
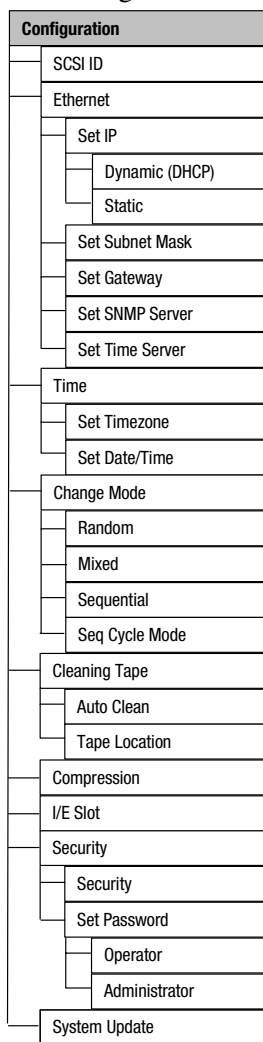
Figure 18: Configuration submenu

Note: The autoloader ships with English firmware installed. To install firmware in other languages, see "Update Firmware" in Chapter 4.

To configure the autoloader, you must set the following:

- SCSI ID
- Ethernet IP address (if you are not using DHCP)
- SNMP server IP address (for SNMP alerts)
- Time server IP address (or the timezone, date, and time, if configuring manually)

Note: The DLT1 and SDLT autoloaders do not have a battery so if time is manually set, it is lost and needs to be reset whenever the autoloader is power cycled.

- Control mode
- Security option

SCSI ID

Each SCSI device attached to a server or workstation must have a unique SCSI ID.

For the DLT1 and SDLT autoloaders you need to set only one SCSI ID for the autoloader; you do not need to set up separate SCSI IDs for the tape drive and autoloader. Because the autoloader uses LUNs to address the drive and robotics, only the autoloader requires a SCSI ID.

For the Ultrium 460 autoloader you must set two SCSI IDs; one for the autoloader and one for the tape drive. The default SCSI ID for the autoloader is 4. The default SCSI ID for the tape drive is 5.

Check the IDs on all other SCSI devices that are on the SCSI bus, including the SCSI host adapter, and select an unused SCSI ID for the autoloader. The default ID for the autoloader is 5, but you can select any unused number between and including 0 and 15. If the factory default SCSI ID (5) is not already being used by another device on the SCSI bus, you do not need to change the autoloader SCSI ID from 5 if you do not want to.

Note: Disregard the SCSI ID switch on the back of the DCA. The autoloader does not use the switch to set the SCSI ID.

To set the SCSI ID:

1. On the main menu, scroll to Configuration.

```
    Status
    Commands
  ▶ Configuration
    Diagnostics
```
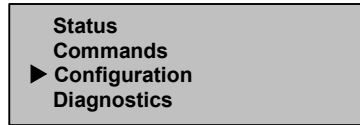
Figure 19: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to SCSI ID.

```
  ▶ SCSI ID
    Ethernet
    Time
    Change Mode          ↓
```

Figure 20: Select SCSI ID

4. Press **Enter**.

5. Scroll to the number you want to set as the autoloader SCSI ID.

```
  ↑  ↓  to change
  Enter to continue
  SCSI ID: 05
```
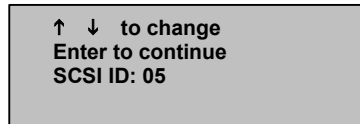
Figure 21: Set SCSI ID

6. Press **Enter**.

7. Reboot for the new SCSI ID to take affect.

    a. Press and hold the power button on the front panel until Power Off appears on the LCD.

    b. Press the power button again to power on the autoloader.

The new SCSI ID is now in effect.

Control Mode

You can set the autoloader to either Random, Mixed, Sequential, or Seq Cycle Mode. The default control mode is Random.

Note: If the I/E slot is enabled, the autoloader cannot be used in Mixed or Sequential Mode.

The Sequential mode supports certain backup applications that do not manage media. During backup, when one cartridge is read or written to the end of the tape, the autoloader automatically returns that cartridge to its slot and loads the cartridge from the next higher numbered slot to the tape drive to be read or written to. This continues until the backup software stops accessing the drive or until all the cartridges have been sequentially accessed.

In Random control mode you can specify which cartridge you want to use and where you want it to go. You will probably use this mode the most.

In Mixed mode, the autoloader supports both Sequential and Random mode functions. This mode can be useful in network environment.

Note: Do not use Mixed mode unless you are certain all applications support Mixed mode operation.

In Seq Cycle mode, the autoloader automatically starts over with magazine slot 1 when the last cartridge is used (slot 16 or highest filled slot). If this control mode is not set, the autoloader stops when the last cartridge available has been used. In Seq Cycle mode, the autoloader continues to cycle until a user stops it.

Caution: Seq Cycle mode could cause data to be overwritten. Only use Seq Cycle mode if you are sure that the size and frequency of your backups will not prematurely overwrite your data.

To set the control mode:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
 ▶ Configuration
   Diagnostics
```
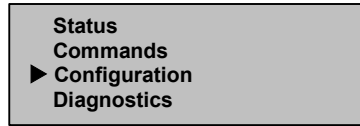
Figure 22: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to Change Mode.

```
   SCSI ID
   Ethernet
   Time
 ▶ Change Mode
   Cleaning Tape        ↓
```

Figure 23: Select Change Mode

4. Press **Enter**.

    The mode options appear. A checkmark appears after the enabled mode.

```
 ▶ ✓ Random
     Mixed
     Sequential
     Seq Cycle Mode
```
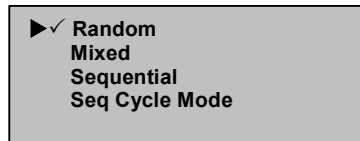
Figure 24: Mode Options

5. Do one of the following:

    ■ To change the control mode, scroll to the desired mode and press **Enter**. A checkmark appears. Press **Enter** again.

    ■ To leave the control mode unchanged, press **Escape**.

6. Reboot for the new mode to take affect.

    a. Press and hold the power button on the front panel until Power Off appears on the LCD.

    b. Press the power button again to power on the autoloader.

The new control mode is now in effect.

> **Note:** When you enable the Sequential mode, LUN 1 no longer appears on the SCSI bus.

Sequential Mode Operation

If you enable the Sequential control mode you must use the Sequential Ops submenu under the Commands menu to operate the autoloader after it has been rebooted.

- **Start** allows you to load the first cartridge.
- **Resume** allows you to continue if the cycle was stopped.
- **Stop** stops the cycle.

To start Sequential Mode operation:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Sequential Ops.
4. Press **Enter**.
5. On the Sequential Ops submenu, scroll to Start.
6. Press **Enter**. `Moving first tape to drive` is displayed.

To stop Sequential Mode operation:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Sequential Ops.
4. Press **Enter**.
5. On the Sequential Ops submenu, scroll to Stop Cart.
6. Press **Enter**. `Ejecting tape from drive` is displayed.

To resume Sequential Mode operation:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Sequential Ops.
4. Press **Enter**.

5. On the Sequential Ops submenu, scroll to Resume.

6. Press **Enter**.

Ethernet

Ethernet is the method the autoloader uses to access a network. With an Ethernet connection, you can remotely access the autoloader over the network to which it is connected. To use the Ethernet connection, you must define the following:

■ A dynamic or static IP address for the autoloader

■ A subnet mask

■ An IP gateway

If you want SNMP alerts or a link to a time server you must define the following:

■ A Simple Network Management Protocol (SNMP) server (for SNMP alerts)

■ A Simple Network Time Protocol (SNTP) time server, or set the time and timezone manually

Note: The DLT1 and SDLT autoloaders do not have a battery so if time is manually set, it is lost and needs to be reset whenever the autoloader is power cycled.

Autoloader IP Address

An Internet Protocol (IP) address is the address of any device that is attached to a network. Each device must have a unique IP address. IP addresses are written as four sets of numbers separated by periods ranging from 0.0.0.0 to 255.255.255.255.

IP addresses are either permanent or dynamically assigned. A permanent address remains the same each time the device connects to a network. A dynamic address changes each time the device connects to the network, and is assigned by the network server using a class of software called Dynamic Host Configuration Protocol (DHCP).

When you first power on the autoloader, the default method for setting the IP address is the dynamic method (DHCP). If you want to use DHCP you can skip this step. To determine the IP address when using DHCP, view the Ethernet status information (see "View Ethernet Information").

To set a dynamic IP address:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
 ▶ Configuration
   Diagnostics
```

Figure 25: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to Ethernet.

```
   SCSI ID
 ▶ Ethernet
   Time
   Change Mode          ↓
```

Figure 26: Select Ethernet

4. Press **Enter**.

5. On the Ethernet submenu, scroll to Set IP.

```
 ▶ Set IP
   Set Subnet Mask
   Set Gateway
   Set SNMP Server
```

Figure 27: Set IP

6. Press **Enter**.

7. Scroll to Dynamic (DHCP).

```
 ▶   Dynamic
   ✓ Static IP


     016.117.076.045
```
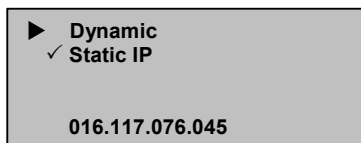
Figure 28: Set Dynamic IP

8. Press **Enter**.

9. Reboot to change the IP address.

    a. Press and hold the power button on the front panel until Power Off appears on the LCD.

    b. Press the power button again to power on the autoloader.

The IP address is changed.

To set a permanent IP address:

1. On the main menu, scroll to Configuration. (See Figure 25.)

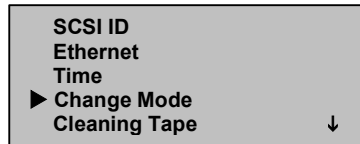2. Press **Enter**.

3. On the Configuration submenu, scroll to Ethernet. (See Figure 26.)

4. Press **Enter**.

5. On the Ethernet submenu, scroll to Set IP. (See Figure 27.)

6. Press **Enter**.

7. Scroll to Static IP. (See Figure 28.)

8. Press **Enter**.

9. At each position of the IP address, scroll to the correct number and press Enter to advance your cursor.

Note: Use the Escape key to backspace to a previous text box, if necessary.

When you have set the IP address, the autoloader displays Enter to save.

10. Press **Enter**.

The Configuration submenu reappears and the permanent IP is now in effect. You do not need to reboot the autoloader.

11. Press **Escape** or **Enter** to return to the Ethernet submenu.

Subnet Mask

Creating a subnet mask is a method to split IP networks into a series of subgroups, or subnets, to improve performance and security.

To set a subnet mask:

1. On the main menu, scroll to Configuration. (See Figure 25.)

2. Press **Enter**.

3. On the Configuration submenu, scroll to Ethernet. (See Figure 26.)

4. Press **Enter**.

5. On the Ethernet submenu, scroll to Set Subnet Mask. (See Figure 27.)

6. Press **Enter**.

7. At each position of the mask address, scroll to the correct number and press **Enter** to advance your cursor.

> **Subnet Mask:**
> **255.255.195.000**
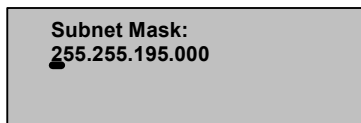
Figure 29: Setting the Subnet Mask

Note: Use the Escape key to backspace to a previous text box, if necessary.

When you have set the mask, the autoloader displays Enter to save.

8. Press **Enter**.

    SUB addr changed to appears on the LCD. You do not need to reboot the autoloader.

9. Press **Escape** or **Enter** to return to the Ethernet submenu.

IP Gateway

An IP gateway is a device that converts data into the IP protocol.

To set an IP gateway:

1. On the main menu, scroll to Configuration. (See Figure 25.)

2. Press **Enter**.

3. On the Configuration submenu, scroll to Ethernet. (See Figure 26.)

4. Press **Enter**.

5. On the Ethernet submenu, scroll to Set Gateway. (See Figure 27.)

6. Press **Enter**.

7. At each position of the gateway address, scroll to the correct number and press **Enter** to advance your cursor.

Default Gateway:
016.117.065.001
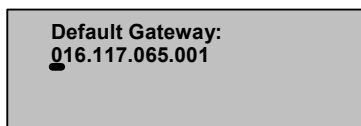
Figure 30: Setting the gateway address

Note: Use Escape to backspace to a previous text box, if necessary.

When you have set the gateway address, the autoloader displays Enter to save.

8. Press **Enter**.

GW changed appears on the display. You do not need to reboot the autoloader.

9. Press **Escape** or **Enter** to return to the menu.

SNMP Server

An SNMP server monitors a network by processing reporting activity in each network device (hub, router, bridge, and so on). The server uses this information to define what is obtainable from each device and what can be controlled (turned off, on, and so on).

To set an SNMP server:

1. On the main menu, scroll to Configuration. (See Figure 25.)
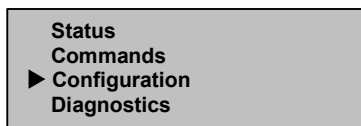
2. Press **Enter**.

3. On the Configuration submenu, scroll to Ethernet. (See Figure 26.)

4. Press **Enter**.

5. On the Ethernet submenu, scroll to Set SNMP Server. (See Figure 27.)

6. Press **Enter**.

7. At each position of the server address, scroll to the correct number and press **Enter** to advance your cursor.

```
SNMP Server:
255.255.255.255
```
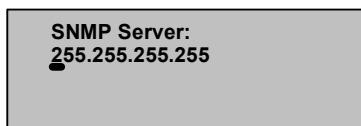
Figure 31: Setting the SNMP server address

Note: Use the Escape key to backspace to a previous text box, if necessary.

When you have set the server address, the autoloader displays Enter to save.

8. Press **Enter**.

   SNMP Server changed to appears on the LCD. You do not need to reboot the autoloader.

9. Press **Escape** or **Enter** to return to the Ethernet submenu.

Time Server

You can connect the autoloader to a server that will supply the correct date and time using Simple Network Time Protocol (SNTP). The autoloader uses this information to time stamp information in its memory.

To set a time server:

1. On the main menu, scroll to Configuration. (See Figure 25.)
2. Press **Enter**.
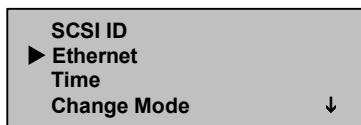3. On the Configuration submenu, scroll to Ethernet. (See Figure 26.)
4. Press **Enter**.
5. On the Ethernet submenu, scroll to Set Time Server. (See Figure 27.)
6. Press **Enter**.

7. At each position of the server address, scroll to the correct number and press **Enter** to advance your cursor.

```
Time Server:
192.005.044.041
```
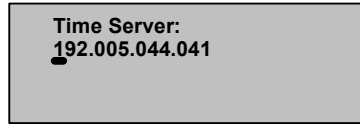
Figure 32: Setting the time server address

Note: Use the Escape key to backspace to a previous text box, if necessary.

When you have set the server address, the autoloader displays Enter to save.

8. Press **Enter**.

Time Server changed to appears on the panel display. You do not need to reboot the autoloader.

9. Press **Escape** or **Enter** to return to the Ethernet submenu.

Time

If you cannot access a time server because your server does not support SNTP or for security reasons, you can set the time manually. If you want to include time changes such as daylight savings time, you must make those changes manually as well.

Note: The DLT1 and SDLT autoloaders do not have a battery so if time is manually set, it is lost and needs to be reset whenever the autoloader is power cycled.

To set the timezone:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
 ▶ Configuration
   Diagnostics
```
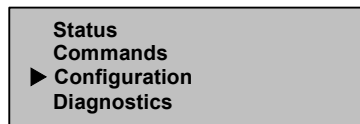
Figure 33: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to Time.

```
SCSI ID
Ethernet
▶ Time
Change Mode              ↓
```
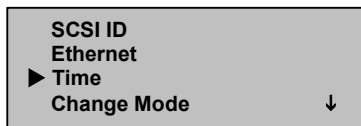
Figure 34: Select Time

4. Press **Enter**.

5. On the Time submenu, scroll to Set Timezone.

```
▶ Set Timezone
Set Date/Time
```
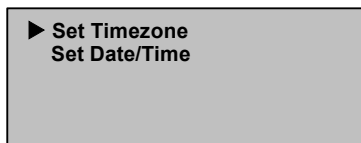
Figure 35: Select Set Timezone

6. Press **Enter**.

   The timezone screen appears.

```
Timezone: set hrs
GMT +0:00
```
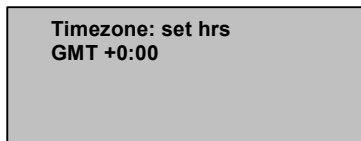
Figure 36: Timezone screen

7. Scroll to set the number of hours difference between your local time and Greenwich Mean Time (GMT).

8. Press **Enter**.

A new timezone screen appears.

```
Timezone: set mins
GMT +0:00
```
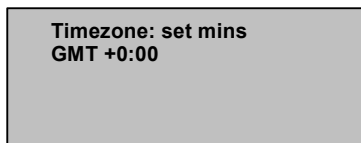
Figure 37: New timezone screen

9. Scroll to set the number of minutes' difference between your local time and Greenwich Mean Time (GMT).

10. Press **Enter**.

The new timezone is set.

To set the date and time:

1. On the main menu, scroll to Configuration. (See Figure 33.)

2. Press **Enter**.

3. On the Configuration submenu, scroll to Time. (See Figure 34.)

4. Press **Enter**.

5. On the Time submenu, scroll to Set Date/Time.

```
  Set Timezone
▶ Set Date/Time
```
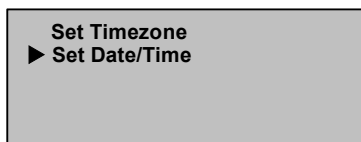
Figure 38: Selecting Set Date/Time

6. Press **Enter**.

The Date/Time screen appears, with the cursor under the first digit in the second row.

```
YYYY.MM.DD.HH.MM
2001.01.01.12.00
Use 24 hour format,
Time zone GMT +0:00
```
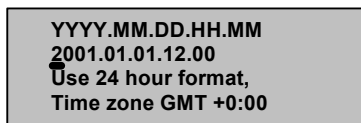
Figure 39: Date/Time screen

7. The first four digits represent the current year. For each digit, scroll to the correct number and press **Enter** to advance your cursor.

Note: Use the Escape key to backspace to a previous text box, if necessary.

---

8. The next two digits represent the current month. For each digit, scroll to the correct number and press **Enter** to advance your cursor.

9. The next two digits represent the current day. For each digit, scroll to the correct number and press **Enter** to advance your cursor.

10. The next two digits represent the current hour. For each digit, scroll to the correct number and press **Enter** to advance your cursor.

11. The last two digits represent the current minute. For each digit, scroll to the correct number and press **Enter** to advance your cursor.

    Enter to save appears on the LCD.

12. Press **Enter**.

Security

Your autoloader includes a security option to password-protect the autoloader's functionality. The default security setting is Off, meaning that no password is required. However, you can enable the security option so that users must enter a password to access functionality.

Set Security

When you first power on the autoloader, the security option is set to Off. Use the following procedure to enable the security option. If the passwords are already set you must have an administrator-level password to set passwords.

To set the security option:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
▶  Configuration
   Diagnostics
```
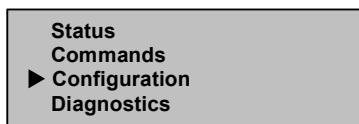
Figure 40: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to Security.

```
Cleaning Tape
Compression                    ↑
I/E Slot
▶Security                      ↓
```

Figure 41: Select Security

4. Press **Enter**.

5. On the Security submenu, scroll to Security. If a checkmark appears after the word, the security option is on. If no checkmark appears, the security option is off.

```
▶ ✓ Security
    Set Password
```

Figure 42: Security options

6. To change the setting, press **Enter**.

   This toggles the security option. For example, if the security option was set to On, it is now set to Off, and no checkmark appears.

Set Passwords

Many operations on the autoloader are password-protected to ensure data integrity. You can set passwords at the administrator level and at the operator level. Operator-level users have access to the Commands and Status menus. Administrator-level users have access to all functionality.

Passwords must be exactly six numbers long. The default password is 000000.

To set a password:

1. On the main menu, scroll to Configuration. (See Figure 40.)

2. Press **Enter**.

3. On the Configuration submenu, scroll to Security. (See Figure 41.)

4. Press **Enter**.

5. On the Security submenu, scroll to Set Password.

> ✓ **Security**
> ▶ **Set Password**

Figure 43: Select Set Password

6. Press **Enter**.

7. To set a password at the operator level, scroll to Operator. To set a password at the administrator level, scroll to Administrator.

> ▶ **Operator**
> **Administrator**

Figure 44: Select password level

8. Press **Enter**.

   The Set Password screen appears.

> **Login as OP**
> **Enter New Password**
>
> ✱ ✱ ✱ ✱ ✱ ✱
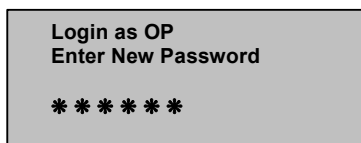
Figure 45: Set Password screen

9. Press **Enter** again.

   A text box appears above the first asterisk.

10. In the text box, scroll to the first number of the password.

11. Press **Enter**.

    The text box above the asterisk disappears and another text box appears above the next asterisk.

12. Repeat steps 10 and 11 to enter the remaining numbers of the password.

> **Note:** Use the Escape key to backspace to a previous text box, if necessary.

When you have entered six numbers, the autoloader displays `Submit Password` below the asterisks.

13. Press **Enter** to submit the password.

    Password Successfully Changed appears on the LCD.

14. Press **Enter**.

    The Operator and Administrator options reappear. You can either enter another password, or press **Escape** or **Enter** to return to the main menu.

Lost Passwords

If you forget the administrator-level password, you cannot enter a new password. You must call your customer service representative.

Tape Cartridge Usage

3

This chapter describes the magnetic tapes and how to handle them properly.

Tape Cartridges Defined

The following tables list the types of media supported in each tape autoloader.

Table 3: DLT1 Supported Media

Media	Part Number	Format	Supported Operation
SDLT I	C7980A	Any	Not supported
DLT IV	C5141F	DLT4000	Read Only*
DLT IV	C5141F	DLT7000	Not supported*
DLT IV	C5141F	DLT8000	Not supported*
DLT IV	C5141F	DLT1/ValueStorage format	Read and Write
DLT I cleaning tape	C7998A	n/a	Cleaning
DLT cleaning tape	C5142F	n/a	Not supported
SDLT 1 cleaning tape	C7982A	n/a	Not supported
*Note: DLT IV media, which has a format other than DLT 1, must be bulk erased to allow a DLT 1 drive to perform writes to the media. Erasing the data cartridge in its original drive is not adequate because the existing, incompatible format remains on the tape cartridge. The degaussing equipment used to bulk erase previously formatted media must have an Oersted rating at least equal to, and preferably two or three times greater than, the rating for the media being erased. For example, DLT Type IV media is rated at 1850 Oersteds. Specific procedures for degaussing your media should be included with your degaussing equipment.			
CAUTION: All previously recorded data is removed if you bulk erase a tape cartridge.			
Note: Ultrium cartridges are not compatible with DLT drives. Ultrium cartridges are not compatible with the SSL1016 DLT magazines.			

Table 4: SDLT 320 Supported Media

Media	Part Number	Format	Supported Operation
SDLT I	C7980A	SDLT 220	Read and Write
SDLT I	C7980A	SDLT 320	Read and Write
DLT IV	C5141F	DLT4000	Read Only
DLT IV	C5141F	DLT7000	Read Only
DLT IV	C5141F	DLT8000	Read Only
DLT IV	C5141F	DLT1/ValueStorage format	Read Only
DLT I cleaning tape	C7998A	n/a	Not supported
DLT cleaning tape	C5142F	n/a	Not supported
SDLT 1 cleaning tape	C7982A	n/a	Cleaning
Note: Ultrium cartridges are not compatible with SDLT drives. Ultrium cartridges are not compatible with the SSL1016 SDLT magazines.			

Table 5: Ultrium 460 Supported Media

Media	Part Number	Format	Supported Operation
Ultrium-2	C7972A	Ultrium-2	Read and Write (Ultrium-2 format)
Ultrium-1	C7971A	Ultrium-1	Read and Write (Ultrium-1 format)
Ultrium Universal Cleaning Cartridge	C7978A	n/a	Cleaning
Note: DLT1 and SDLT cartridges are not compatible with the Ultrium drive. DLT1 and SDLT cartridges are not compatible with the SSL1016 Ultrium 460 magazines.			

■ DLTtape IV data cartridges provide a storage capacity of up to 40 GB (native)/80 GB (compressed) per cartridge. The tape cartridge shell is dark brown and has no pattern.

■ SDLT data cartridges are green and have a storage capacity of up to 160 GB (native)/320 GB (compressed).

■ 400 GB (Ultrium 2) data cartridges are dark red and provide a storage capacity of up to 200 GB (native)/400 GB (compressed). The 400 GB (Ultrium 2) data cartridges provide the highest capacities.

■ 200 GB (Ultrium 1) data cartridges are blue and provide storage capacity of up to 100 GB (native)/200 GB (compressed).

Tape Cartridge Maintenance

To greatly reduce the chance of problems with your tape cartridges or damage to your tape drive, use the following guidelines.

Inspecting Tape Cartridges

Inspect your tapes to identify any potential tape cartridge problems and prevent accidental loss of data or damage to your cartridges. Inspect your tapes:

■ When you change or load a new tape cartridge

■ If a tape cartridge is dropped or subjected to physical shock

■ If the tape drive becomes inoperable after loading a tape cartridge

■ If you receive a shipment of tape cartridges that shows any sign of shipping damage

To inspect a tape:

1. Remove the tape cartridge from its protective plastic case.

2. Check the tape cartridge for obvious cracks or other physical damage. Look for broken or missing parts.

3. Gently shake the tape cartridge. Listen for any rattling or sounds of loose pieces inside the cartridge.

4. If you hear anything on DLT or SDLT cartridges, do not use the cartridge.

   a. If it doesn't rattle, check the tape leader inside the cartridge. To do this, open the door on the rear of the cartridge by releasing the door lock.
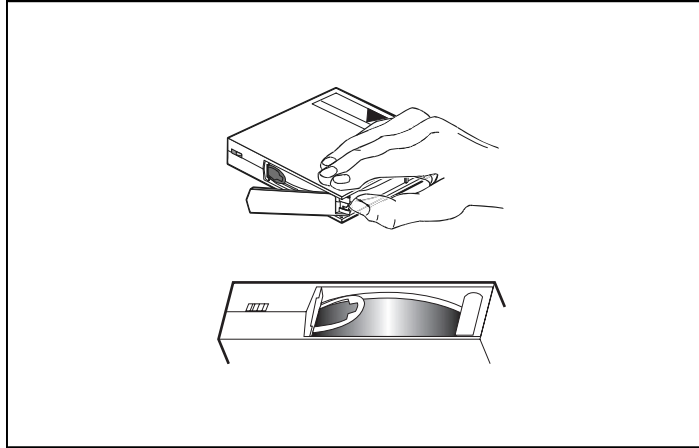
Figure 46: Opening the cartridge door

b. For SDLT cartridges: The loop should stick up about an eighth of an inch when viewed from the edge; the loop must be a closed loop. If the loop is torn, bent, pulled in, or not sticking up about an eighth of an inch, do not use the tape cartridge.
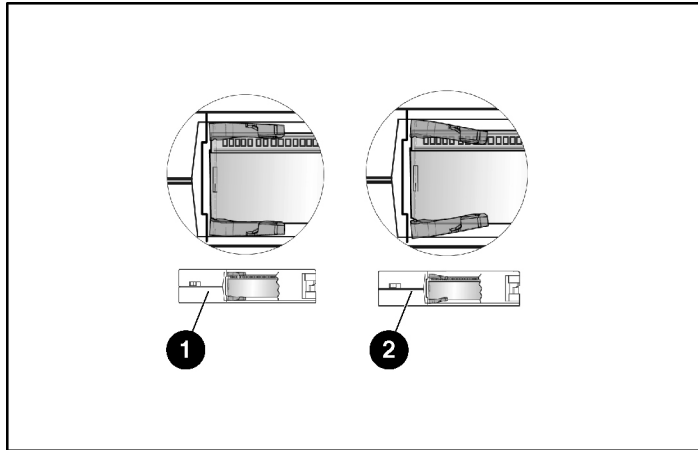
Figure 47: Checking the SDLT tape leader

❶   Good
❷   Worn (do not use)

c. For DLTtapes: hold the tape cartridge so that the end that is inserted into the tape drive is facing you. On the left side of the tape cartridge you should see a small plastic tab. This is the left reel lock and can break if the cartridge is dropped. If you cannot see the tab, do not use the cartridge.

d. For DLTtapes: Do not use the cartridge if you see any of the following conditions:
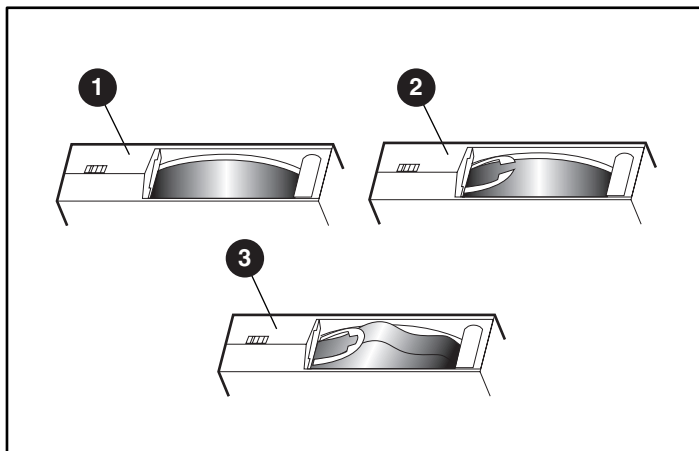
Figure 48: DLTtape faulty leader situations

❶ Swallowed leader - leader is completely wound around into the cartridge, leaving no loop for the buckling link to catch.
❷ Torn leader loop - if the loop gets ripped to create an opening, the buckling link will fail to grab the loop and thus not transport the tape into the drive.
❸ Creased leader loop - the loop is stuck and the cartridge leader cannot unwind into the drive. As the drive leader's buckling link engages the cartridge leader loop, it can detach the loop and drag it into the drive causing damage.

e. For DLTtapes: look at the bottom of the tape cartridge. The bottom reel lock is located in the lower right corner and can break if the cartridge is dropped. If you cannot see the tab, do not use the cartridge.

Note: On the DLTtape cartridge, the reel lock is white and easy to see.

5. Check for proper operation of the tape cartridge write-protect switch.

Protecting Tape Cartridges

To extend the life of your tape cartridges:

■ Remove dust on the outside of tape cartridges with a damp cloth.

■ Do not use adhesive labels or POST-IT notes on the top, side, or bottom of your tape cartridge. Use only the label provided with each cartridge and slide it in the label slot on the cartridge.

■ Do not use graphite pencils, water-soluble felt pens, or other debris-producing writing instruments on labels.

■ Replace — never erase — a label.

■ Put unused cartridge labels in a separate location. A static electricity charge on a cartridge may cause a label to cling to the cartridge. If you accidentally insert a label into the drive along with a cartridge, the label may cause problems with or damage to the tape drive.

■ Do not touch or allow direct contact with tape or tape leader. Dust or natural skin oils may contaminate the tape and impact tape performance.

■ Do not expose the tape cartridge to moisture or direct sunlight.

■ Do not expose cartridges to extreme temperatures or humidity. Refer to the documentation that comes with your tape media for appropriate operating and storage temperatures.

■ Do not expose tape cartridges to magnetic fields.

■ Avoid unnecessary opening of the cartridge door; this can expose the tape to contamination or physical damage.

■ Do not drop the tape cartridges or subject the cartridges to physical shock.

■ Do not insert any cartridge that has been dropped into a tape drive without carefully inspecting for damage. A dropped cartridge can have dislodged, loosened, or damaged internal components which can also damage the tape drive.

■ Do not take tape cartridges apart.

■ Do not leave cartridges in the tape drive when the autoloader power is off.

Transporting Tape Cartridges

To safely transport tape cartridges:

- Always keep each tape cartridge in its protective plastic case when it is not in the tape drive.

- When carrying tape cartridges in their cases, always orient the cases so that the grooves in the cases interlock. This prevents the cases from slipping apart and falling.

- Do not carry cartridges loosely in a box or in any other container. Allowing cartridges to hit together exposes them to unnecessary physical shock.

Storing Tape Cartridges

To store tape cartridges properly:

- Never stack more than five tape cartridges.

- When placing tape cartridges in archival storage, make sure you stand each tape cartridge vertically.

- Store tape cartridges in their plastic containers and in the environmental conditions recommended in your tape media documentation.

- If storage and/or transportation of a tape cartridge has exposed it to conditions outside the recommended environment, "condition" the tape cartridge to its operating environment for a 24-hour period.

- Do not place cartridges on or near devices that may produce magnetic fields such as computer monitors, motors, or video equipment. Such exposure can alter or erase data on the tape.

Using the Write-Protect Switch

All tape cartridges have a write-protect switch to prevent accidental erasure of data. When you enable write-protection, existing data on the tape cannot be overwritten, nor can additional data be appended to the tape. When you disable write-protection, existing data on the tape can be overwritten, and additional data can be appended.

Note: Before loading a cartridge into your autoloader, make sure that you set the write-protect switch to the desired position.

DLT IV Cartridges
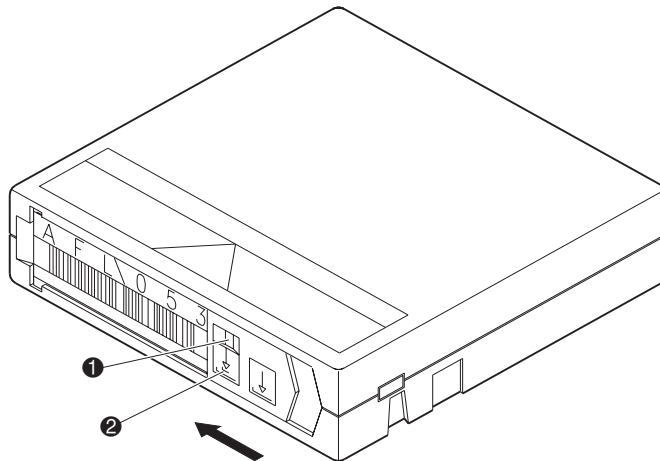
Figure 49: Write-protect switch, DLT IV

❶ Write-protected (An orange indicator appears above the switch)
❷ Write-enabled

Table 6: Write-Protect Switch Positions

Write-Protect Switch Position	Orange Indicator	Result
Write-Protected (with the hub facing down and the write-protect switch facing you as shown in Figure 49, slide the switch to the left.)	Visible	■ Data cannot be written to the tape. ■ Existing data on the tape cannot be overwritten. ■ Additional data cannot be appended to the media.
Write-Enabled (with the hub facing down and the write-protect switch facing you as shown in Figure 49, slide the switch to the right.)	Not visible	Unless the cartridge is write-protected via software: ■ Data can be written to the tape. ■ Existing data on the tape can be overwritten. ■ Additional data on the tape can be overwritten.

SDLT 320 Cartridge

Figure 50 illustrates using the write-protect switch. By moving the switch to the left ❶, the cartridge is write-protected, and by moving the switch to the right ❷, the cartridge is write-enabled.
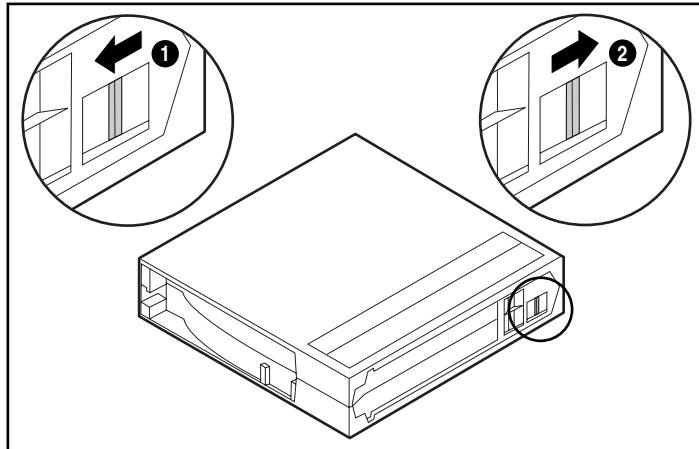
Figure 50: Write-protect switch, SDLT 320

Ultrium Data Cartridge

❶ shows the location of the right protect switch. By moving the switch on the bottom of the cartridge to the right, the cartridge is write-protected, and by moving the switch to the left, the cartridge is write-enabled.
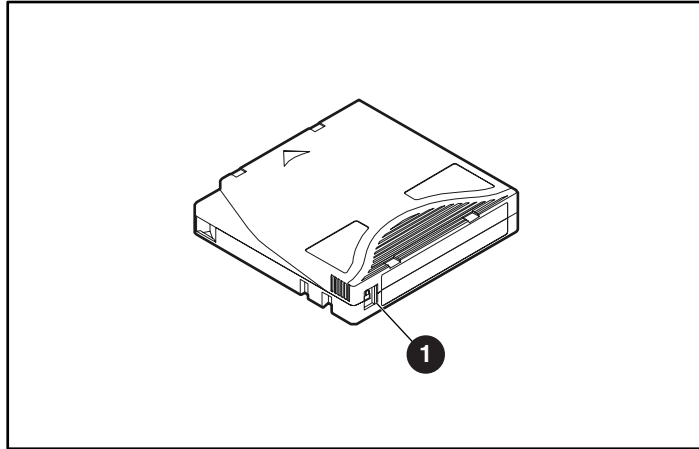
Figure 51: Write-protect switch, Ultrium

Autoloader Operation

4

You can operate the autoloader by any of the following methods:

■   Autoloader front panel — Operate manually to insert and eject tapes and to unload magazines.

■   Ethernet Web Administration — The Ethernet connection lets you perform administrative functions remotely using Web Administration. You can also move tapes within the autoloader through the Ethernet connection.

■   Host backup software — The SCSI bus connects the autoloader to the host server and the backup software. You can perform any functions contained in the backup software.

Front Panel Components

The front panel includes a blue backlit liquid crystal display (LCD), four function keys ($\triangle$ [scroll up], $\triangledown$ [scroll down], **Enter**, and **Escape**), and two LEDs.

Function Keys

Use the function keys to navigate through the menu and select options. Use the up and down scroll buttons to position the cursor next to the item you want. Once the cursor is in place, press **Enter** to select the item. To return to a previous menu without making a selection, press **Escape**. The **Escape** button can also function as a backspace key.

LEDs

The LEDs display autoloader and drive status information. When the autoloader is powered on, the left, green LED gives ready status information, and the right, amber LED gives fault status information.

Table 7: Indicator Activity

Indicator	State	Operating Condition
Left (green)	On	Autoloader and tape drive are idle.
	Slow Flash	Tape drive only is active.
	Fast Flash	Autoloader only is active or autoloader and tape drive are active.
Right (amber)	Off	No errors or problems detected.
	On	Tape drive or autoloader error is detected.
	Continuous flash	Non-hardware error is detected (for example, cleaning is required.
	Brief flash	POST in progress

LCD

The LCD displays a scrolling menu that lets you to access information and execute commands.

Note: When the autoloader is idle for more than 60 seconds, the logo screen appears on the LCD, similar to the screensaver function on your PC. Press any function key to display the top-level menu.

The four menus displayed on the LCD are circular menus; you can scroll through the options using either the up or down scroll buttons. The first menu you access on the front panel contains the top-level menu items. Each item in turn contains submenus.
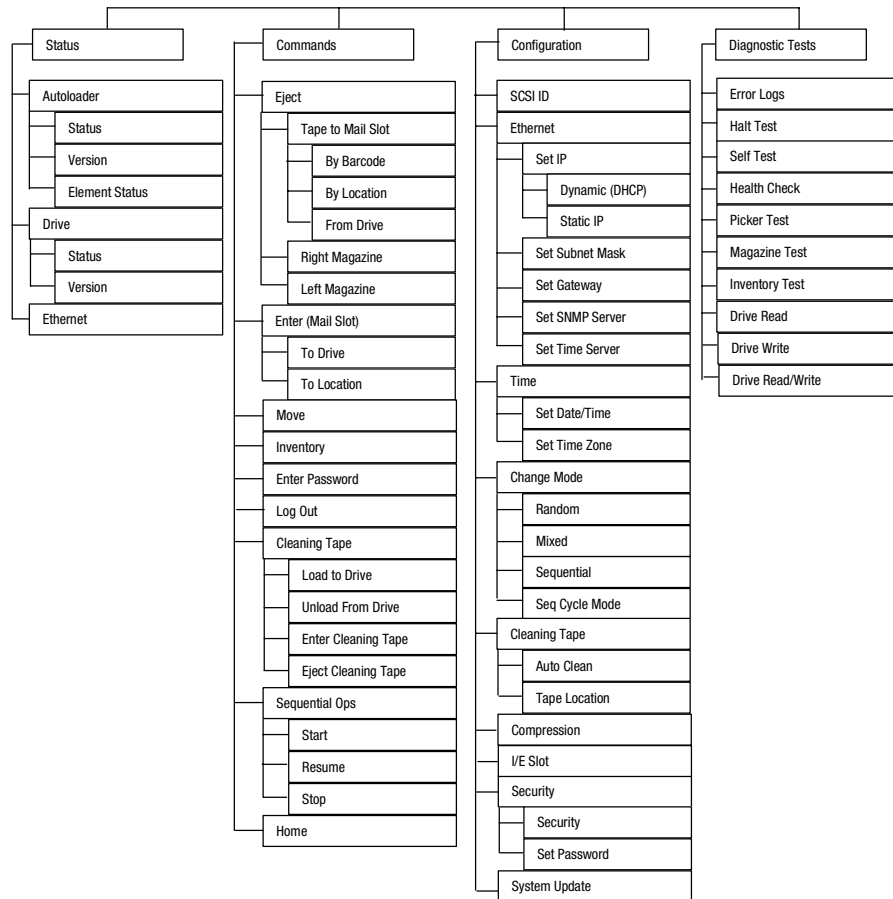
Figure 52: Menu Tree Structure

Note: For SSL1016 Ultrium 460 tape autoloaders, drive logs and drive read/write tests must be accessed using Library & Tape Tools. L&TT is available at: http://www.hp.com/support/tapetools.

All the functionality accessed from the scrolling menu is password-protected. Two levels of security are built into the menu. The lower-level security is the operator level and the higher-level security is the administrator level. There is one password for each level.

The administrator password accesses all the available functionality. The operator password accesses all the functionality in the Commands and Status submenus.

Front Panel Functionality

For most functions, you can use either the front panel or the Web Administration tool through the Ethernet connection.

Setting Passwords

Many functions on the autoloader may be password-protected to ensure data integrity. To access the menu items necessary to execute these functions, you must first enter your password. All passwords are six numeric digits.

To set a password, see the section "Set Passwords" in Chapter 2.

When a password has been entered, all password-protected functionality is available until the user logs out. If you do not use the front panel for a period of time, the logo reappears on the LCD. When the logo reappears, the autoloader has automatically logged you out. You will have to re-enter your password to access the menu functionality.

Default Front Panel Password

The default password for the front panel is 000000.

Logout

To logout:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Log Out.
4. Press **Enter**.

   `Session Complete` appears on the LCD.

Using Data Cartridges

Typically, when you first install your autoloader, you insert your cartridges into the magazines and then insert the magazines into the autoloader. However, you can insert and eject cartridges individually using the mailslot, or you can eject a magazine, manually insert and remove cartridges, then insert the magazine back into the autoloader. The autoloader automatically detects the presence of a cartridge in the mailslot and in a magazine slot.

Note: On the front panel menu, Enter or Eject means the tape enters and leaves the autoloader through the mailslot. Whenever you see Load or Unload, it means the tape is loaded into or unloaded from the tape drive.

If you try to perform an illegal operation, the autoloader refuses to perform the operation. For example, if you try to insert a cartridge through the mailslot to the drive but the drive already contains a cartridge, the mailslot does not unlock. If you try to unload a cartridge from the drive while the autoloader is writing to the tape, your command is ignored.

Inserting a Single Cartridge

Use the mailslot to insert a single cartridge into the autoloader. You must enter a valid password to unlock the mailslot before you can insert a cartridge. When you insert a cartridge through the mailslot, you can load it into the tape drive or store it in a magazine.

Note: Be sure you are using a cartridge that is compatible with your tape drive. See Chapter 3, "Tape Cartridge Usage," for compatibility tables.

To insert a cartridge into the tape drive:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Enter.
4. Press **Enter**.
5. On the Enter submenu, scroll to To Drive.
6. Press **Enter**.

After Load cartridge appears on the LCD, a countdown appears. You have 20 seconds to load a cartridge through the mailslot before it relocks. The autoloader automatically loads the cartridge into the tape drive.

Note: Only insert the cartridge until you meet resistance.
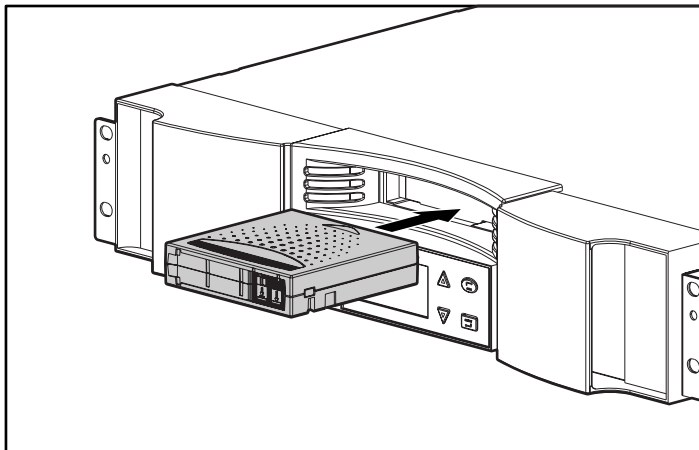
Figure 53: Inserting a cartridge into the mailslot

To insert a cartridge to a magazine slot:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Enter.
4. Press **Enter**.
5. On the Enter submenu, scroll to To Location.
6. Press **Enter**.

   A map of all the magazine slots appears. Occupied slots are indicated by an asterisk.

7. Scroll to the slot where you want to store the cartridge.
8. Press **Enter**.

After Load cartridge appears on the LCD, a countdown appears. You have 20 seconds to load a cartridge through the mailslot before it relocks. The autoloader automatically loads the cartridge into the selected slot.

Moving a Single Cartridge

To move a single cartridge from one location to another inside the autoloader:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Move.
4. Press **Enter**.

   The Move screen appears.

5. Under From:, scroll to the current location of the cartridge you want to move. Occupied slots are indicated by an asterisk.

Note: If you select an empty location No Source Element appears on the LCD. Choose a different location.

---

6. Press **Enter**.
7. Under To:, scroll to the location to which you want to move the cartridge. Occupied slots are indicated by an asterisk.

Note: If you select a location that is already occupied Destination Full appears on the LCD. Choose a different location.

---

8. Press **Enter**.

   The LCD displays Ent or Esc? below your selections.

9. Press **Enter**.

   An hourglass appears on the LCD as the autoloader moves the cartridge to its new location.

Ejecting a Single Cartridge

You can remove a single cartridge from the autoloader by specifying the desired cartridge by barcode or location, or by choosing the cartridge currently in the tape drive.

To eject a cartridge by barcode:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Eject.
4. Press **Enter**.
5. On the Eject submenu, scroll to Cartridge.
6. Press **Enter**.
7. Scroll to By Barcode.

   A barcode label appears.
8. Scroll to the label that corresponds to the cartridge you want to unload.
9. Press **Enter**.

An hourglass appears on the LCD as the cartridge you want is ejected from the mailslot.Wait until the hourglass disappears from the LCD before pulling out the cartridge.

To eject a cartridge by location:

1. On the main menu, scroll to Commands.
2. Press **Enter**.
3. On the Commands submenu, scroll to Eject.
4. Press **Enter**.
5. On the Eject submenu, scroll to Cartridge.
6. Press **Enter**.
7. Scroll to By Location.

   A map of all the magazine slots appears. Occupied slots are indicated by an asterisk.
8. Scroll to the slot containing the cartridge you want to eject.
9. Press **Enter**.

An hourglass appears on the LCD as the cartridge you want is ejected from the mailslot.Wait until the hourglass disappears from the LCD before pulling out the cartridge.

To eject a cartridge from the tape drive:

1. On the main menu, scroll to Commands.

2. Press **Enter**.

3. On the Commands submenu, scroll to Eject.

4. Press **Enter**.

5. On the Eject submenu, scroll to Cartridge.

6. Press **Enter**.

7. Scroll to From Drive.

8. Press **Enter**.

An hourglass appears on the LCD as the cartridge you want is ejected from the mailslot. Wait until the hourglass disappears from the LCD before pulling out the cartridge.

Note: After ejecting a single cartridge, immediately remove it from the mail slot when prompted.

Removing a Magazine

When you want to remove several cartridges at once, remove the magazine(s) first.

To remove a magazine:

1. On the main menu, scroll to Commands.

2. Press **Enter**.

3. On the Commands submenu, scroll to Eject.

4. Press **Enter**.

5. On the Eject submenu, scroll to Right Magazine or Left Magazine.

6. Press **Enter**.

You will hear a distinctive popping sound as the appropriate magazine is ejected from the autoloader. Left magazine has been ejected or Right magazine has been ejected appears on the LCD.

> ⚠️ **Caution:** To prevent damage to the autoloader or the magazine, use both hands when removing the magazine from the autoloader, supporting the entire length of the magazine.

7. Grasp the magazine by the handle with one hand and slide it out, supporting it underneath with the other hand.

Note: Once you eject a magazine, you must fully remove it or fully re-install it before powering off the autoloader.
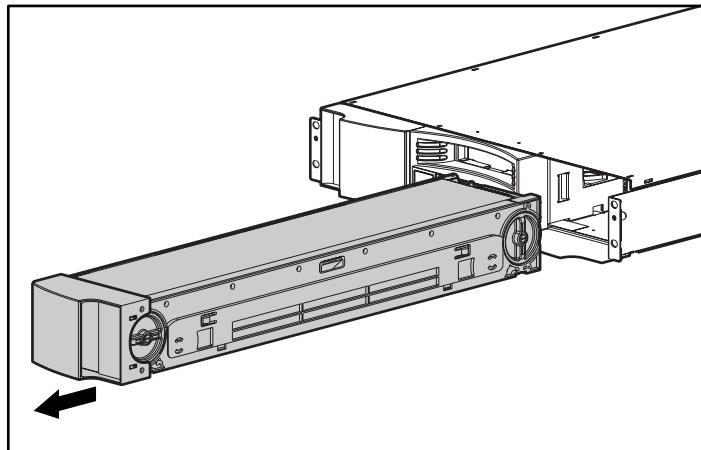
Figure 54: Removing a magazine

Installing a Magazine

To install a magazine:

Note: Be sure you are using the proper magazine for your autoloader. DLT/SDLT magazines are not compatible with the SSL1016 Ultrium 460 Autoloader. Ultrium magazines are not compatible with the SSL1016 DLT1 Autoloader or the SSL10106 SDLT 320 Autoloader.

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1. Grasp the magazine by the handle with one hand and support it underneath with the other hand.

2. Slide the magazine into the magazine bay. Make sure you position the magazine correctly; it should slide smoothly.

⚠ **Caution:** Be sure that you install only a left-oriented magazine in the left bay and a right-oriented magazine in the right bay.
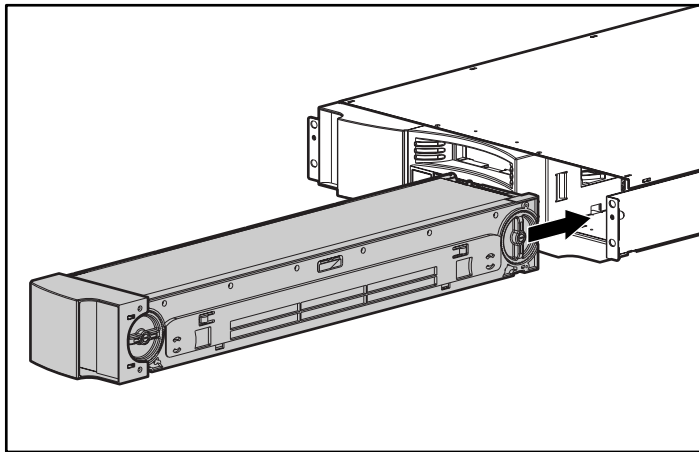
Figure 55: Installing a magazine

3. The magazine is correctly installed when you feel it click into place and the front is flush with the front panel. Left Mag Inserted or Right Mag Inserted appears on the LCD.

Inserting and Removing Cartridges

The magazine must be fully removed to insert and remove cartridges.

There are two gears located on both ends of the magazine. Move the slots within the magazine by using these two gears. Use the two openings along the top of the magazine and the four openings along the bottom of the magazine to insert and remove cartridges from the eight slots within each magazine.

To insert a cartridge into the magazine:

1. Center a slot within one of the six openings on the side of the magazine.

2. Properly orient the cartridge.

Note: There is a keying feature in each slot that only lets you fully insert the cartridge one way.

3. Fully insert the cartridge into the slot. When pushing the cartridge into the slot you will feel slight resistance until the cartridge is properly seated into the slot.
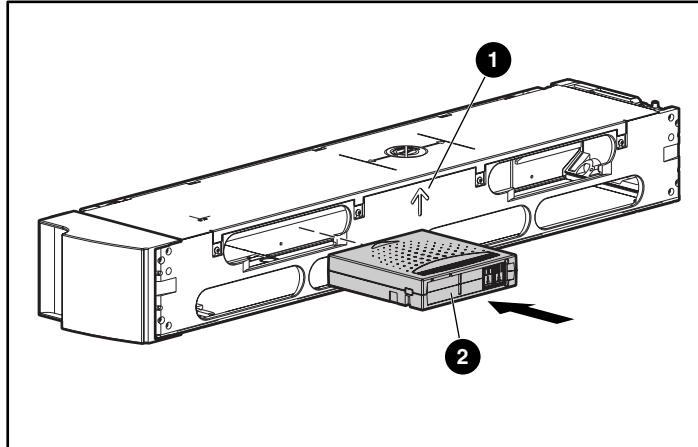
Figure 56: Inserting a cartridge

To remove a cartridge, use the handles to center the desired slot in the openings on the side of the magazine. Use your thumb and index finger to pull out the cartridge. You will feel slight resistance when removing the cartridge.

Manually Removing a Magazine

To remove a magazine manually:

1. Power off the autoloader.
2. Place the autoloader on a flat, stable surface.
3. Locate the small rectangular opening on the back of the autoloader behind the magazine that you want to remove.
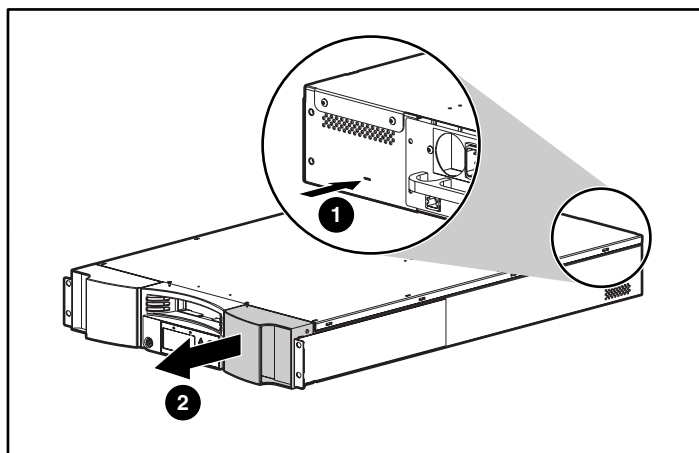
Figure 57: Manually removing a magazine

4. Carefully insert the end of a small, sturdy tool, such as a jeweler's screwdriver, about one inch into the opening. On a right magazine, keep the tool as far to the left as you can. On a left magazine, keep the tool as far to the right as you can.

5. On a right magazine, slide the tool to the right. On a left magazine, slide the tool to the left. You will feel resistance as the tool presses against the latch. Press hard enough to release the latch.
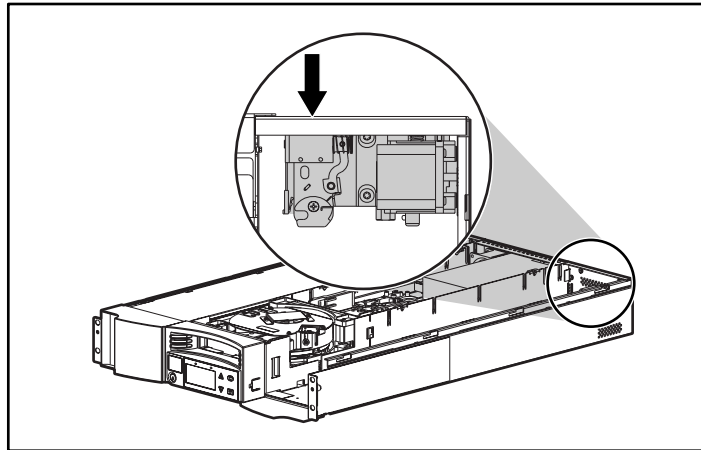
Figure 58: Inside release latch

When you release the latch, the magazine pops forward so that the front of the magazine is no longer flush with the front panel.

6. With one hand, grasp the magazine by the handle and slide it forward to remove. Place your other hand under the magazine to support it and prevent it from falling.

Changing the Orientation

Any magazine can be configured to fit in the right or left magazine bay.

To change the orientation of a magazine:

1. Remove the two screws that attach the handle to the front of the magazine.
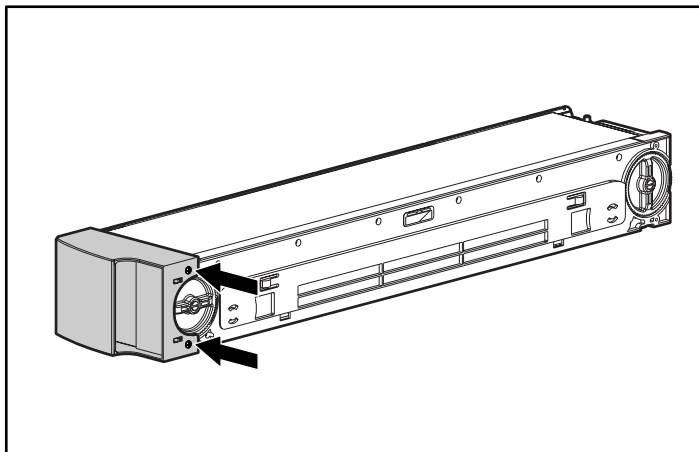
Figure 59: Removing the screws

2. Unsnap the handle carefully, ensuring you do not break the hinge.
3. Rotate the handle 180 degrees so that what was the top of the handle is now the bottom.
4. Rotate the magazine 180 degrees so that what was the front of the magazine is now the rear.
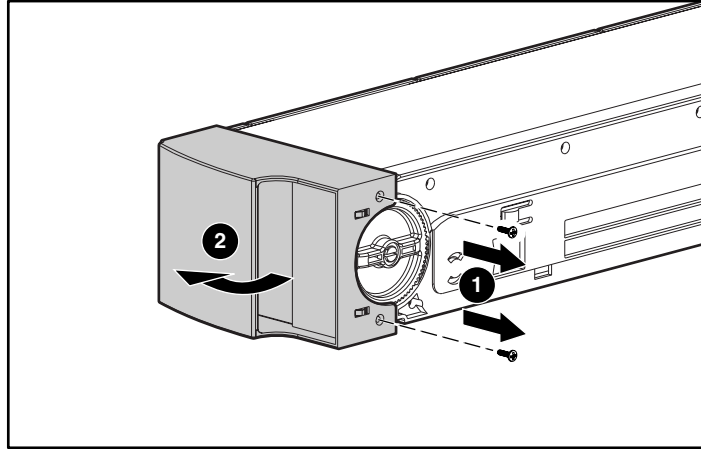
Figure 60: Removing the handle

5. Snap the handle back on the end of the magazine.

6. Install the two screws to attach the handle securely to the magazine.

Viewing Status Information

From the scrolling menu, you can view the following information:

■ Autoloader status

■ Firmware version

■ Element status

■ Tape drive status

■ Tape drive version

■ Ethernet information

■ System performance

Autoloader Status

The autoloader status provides information about:

■   Whether a magazine is installed or not

■   SCSI connection activity

■   Ethernet connection activity

To view the autoloader status:

1.   On the main menu, scroll to Status.

```
▶ Status
  Commands
  Configuration
  Diagnostics
```
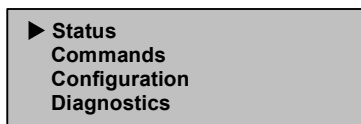
Figure 61: Main menu

2.   Press **Enter**.

3.   On the Status submenu, scroll to autoloader Info.

```
▶ Autoloader Info
  Drive Info
  Ethernet Info
```

Figure 62: Select Autoloader Info

4.   Press **Enter**.

5.   On the Autoloader Info submenu, scroll to Status.

```
▶ Status
  Version
  Element Status
```
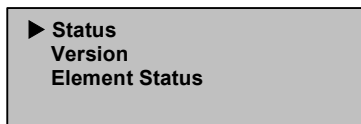
Figure 63: Select Status

6.   Press **Enter**.

A list of messages similar to the following screen appears.

> **Magazines: L ✳ R ✳**
> **Loader: ONLINE**
> **Drive: ONLINE**
> **Mode: Mixed**
> **Barcode Reader: ✳**

Figure 64: Autoloader status message

Table 8: Autoloader Status Messages

Magazine	
L=✳	The left magazine is present.
R=✳	The right magazine is present.
L= (no ✳)	The left magazine is not present.
R= (no ✳)	The right magazine is not present.
Loader	
ONLINE	The autoloader SCSI connection is active.
OFFLINE	The autoloader SCSI connection is not active.
Drive	
ONLINE	The drive SCSI connection is active.
OFFLINE	The drive SCSI connection is not active.
Mode	
Random	Default. The autoloader is operating in Random mode.
Mixed	The autoloader is operating in Mixed mode.
Sequential	The autoloader is operating in Sequential mode.
Seq Cycle Mode	The autoloader is operating in Seq Cycle Mode.
NOTE: ISVs support different modes of operation. Be sure your autoloader is set to the correct mode of operation. The autoloader defaults to Random mode. See "Control Mode" in Chapter 2 for additional information.	
Barcode Reader	
✳	A barcode reader is present.
No ✳	A barcode reader is not present.

View Firmware Version

To view the firmware version:

1. On the main menu, scroll to Status. (See Figure 61.)

2. Press **Enter**.

3. On the Status submenu, scroll to Autoloader Info. (See Figure 62.)

4. Press **Enter**.

5. On the autoloader Info submenu, scroll to Version. (See Figure 63.)

6. Press **Enter**.

   A list of messages similar to the following screen appears.

   ```
   Firmware: V7.0
   EDC: 575A49B8
   HW + ME Rev: 1  1
   ```
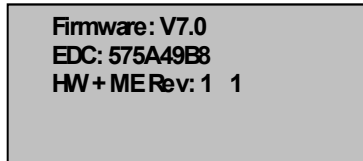
Figure 65: Autoloader version messages

Table 9: Autoloader Version Messages

Firmware	The number indicates the firmware version.
EDC	The number indicates the Error Detection Code that was generated when the firmware was installed. The autoloader uses this number to verify that the firmware and the memory holding the firmware are good.
HW Rev	The number indicates the hardware version.
ME Rev	The number indicates the mechanical version.

View Element Status

The element status reports the status of the magazine slots. The status indicates whether a slot contains a cartridge, and which slot is allocated as the cleaning cartridge's slot.

To view an element's status:

1. On the main menu, scroll to Status. (See Figure 61.)

2. Press **Enter**.

3. On the Status submenu, scroll to Autoloader Info. (See Figure 62.)
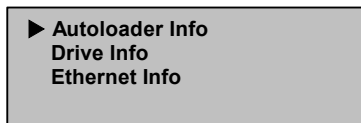
4. Press **Enter**.

5. On the autoloader Info submenu, scroll to Element Status. (See Figure 63.)

```
✳ Drive: ADI285
  Mailslot:
  Picker:
  Enter to View
  Magazines
```
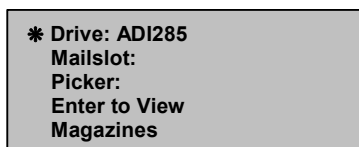
Figure 66: Element status

Press **Enter** to view magazines. A map of all the magazine slots appears.

An asterisk (*) indicates a slot occupied by a data cartridge, a (@) indicates a slot occupied by a cleaning cartridge, and an (!) indicates an empty slot designated as cleaning slot.
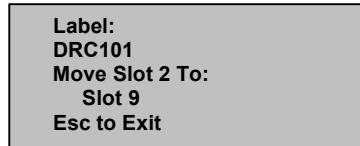
Slot 1	Slot 2*	Slot 3*	Slot 4*
Slot 5	Slot 6	Slot 7*	Slot 8*
Slot 9	Slot 10*	Slot 11*	Slot 12*
Slot 13*	Slot 14*	Slot 15*	Slot 16*

Figure 67: Magazine map

Note: If the I/E slot is enabled, I/E Slot replaces either Slot 1 or Slot 16.

6. Scroll to the slot containing the cartridge for which you want to see the status.

7. Press **Enter**.

The Element Status screen appears, displaying the barcode label for that cartridge (if an inventory has previously been run). A move command also appears on the screen.

```
Label:
DRC101
Move Slot 2 To:
    Slot 9
Esc to Exit
```

Figure 68: Element status screen
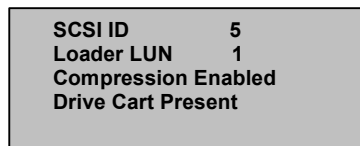
    a.   If you want to move the cartridge scroll until the location you want to move to appears under TO:, then press **Enter**.

    b.   If you do not want to move the cartridge, press **Escape**.

View Tape Drive Status

To view the tape drive status:

1. On the main menu, scroll to Status. (See Figure 61.)

2. Press **Enter**.

3. On the Status submenu, scroll to Drive Info. (See Figure 62.)

4. Press **Enter**.

5. On the Drive Info submenu, scroll to Status. (See Figure 63.)

6. Press **Enter**.

   A list of messages similar to the following screen appears.

```
SCSI ID          5
Loader LUN       1
Compression Enabled
Drive Cart Present
```

Figure 69: Drive status screen

Table 10: Tape Drive Status Messages

SCSI ID	The number indicates the autoloader SCSI ID number.
Loader LUN	The number indicates the Logical Unit Number of the autoloader.
Compression	Indicates whether the tape drive compression is enabled or disabled.
Drive Cart	Indicates whether a cartridge is present in the drive.

View Tape Drive Version

To view the tape drive version:

1. On the main menu, scroll to Status. (See Figure 61.)

2. Press **Enter**.

3. On the Status submenu, scroll to Drive Info. (See Figure 62.)

4. Press **Enter**.

5. On the Drive Info submenu, scroll to Version. (See Figure 63.)

6. Press **Enter**.

   A list of messages similar to the following screen appears.

```
Product Type:   DLT 1
Policy Version:
35.52
Servo Version:
65.6
```

Figure 70: Tape drive version screen

Table 11: Tape Drive Version Messages

Product Type	The number indicates the type of product installed (DLT1).
Policy Version	The number indicates the version of the policy processor for the tape drive, typically the tape drive firmware version.
Servo Version	The number indicates the servo processor firmware version.

View Ethernet Information

To view Ethernet information:

1. On the main menu, scroll to Status. (See Figure 61.)

2. Press **Enter**.

3. On the Status submenu, scroll to Ethernet Info. (See Figure 62.)

4. Press **Enter**.

   A list of messages similar to the following screen appears.

   ```
   MAC address:
   00-e0-9e-03-0e-39
   IP Address
   16.116.76.46
   Network: Disconnected
   ```

Figure 71: View Ethernet information

Table 12: Ethernet Information Messages

Mac Address	Indicates the serial number of your Ethernet card.
IP Address	The number indicates the static IP address or the currently assigned dynamic IP address.
Network	Indicates whether or not the autoloader is connected to the network.

Run Inventory

The autoloader provides a method to keep track of the cartridges currently loaded in the magazines. If your autoloader is equipped with a barcode reader, it can scan the cartridge barcode labels and store the data in its non-volatile memory.

The autoloader automatically runs an inventory whenever you power it on or insert a magazine.

To take inventory:

1. On the main menu, scroll to Commands.

2. Press **Enter**.

3. On the Commands submenu, scroll to Inventory.

4. Press **Enter**.

   The autoloader scans the barcodes on all the cartridges present.

Note: If no barcode label is present the autoloader checks for the presence or absence of cartridges in all locations.

Set Data Compression

You can set the autoloader to write data to the tape in its native (uncompressed) format or to compress it. Compressing the data means that the autoloader can typically write twice as much data to the same amount of tape. Actual compression may vary, depending on the type of data being backed up. Compression also increases the performance of the data transfers from or to the SCSI bus.

Typically you will want to leave this option enabled unless you are backing up data that is already compressed. Attempting to compress compressed data can reduce performance and increase data size.

To set compression option:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
 ▶ Configuration
   Diagnostics
```
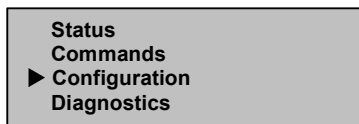
Figure 72: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to Compression.

```
   Time
   Change Mode            ↑
   Cleaning Tape
 ▶ Compression            ↓
```
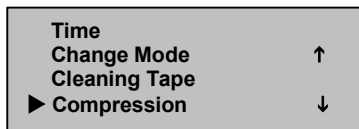
Figure 73: Set Compression

4. Press **Enter**.

   If a check appears next to Compression, the compression option is enabled. If no checkmark appears, the compression option is disabled.

   a. To leave the compression option unchanged, press **Escape**.

   b. To change the compression option, press **Enter**.

Update Firmware

Autoloader firmware can be updated by using Library & Tape Tools (L&TT). Additional details can be obtained at:

http://www.hp.com/support/tapetools

Configuration

To change any Ethernet configurations, see "Ethernet" in Chapter 2.

Import/Export Slot

Note: Any change requires a power cycle of the autoloader and reconfiguration of the ISV software.

To change the configuration of the Import/Export slot:

1. On the main menu, scroll to Configuration.

```
   Status
   Commands
 ▶ Configuration
   Diagnostics
```
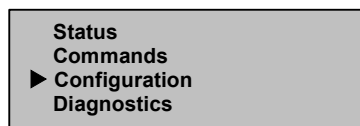
Figure 74: Main menu

2. Press **Enter**.

3. On the Configuration submenu, scroll to I/E Slot.

```
   Cleaning Tape
   Compression            ↑
 ▶ I/E Slot
   Security               ↓
```

Figure 75: Configure Import/Export Slot

4. Press **Enter**.

   If a check appears next to Import/Export Slot, the I/E slot is enabled. If no checkmark appears, the I/E slot is disabled.

   a. To leave the I/E slot unchanged, press **Escape**.

   b. To change the I/E slot, press **Enter**.

Any change requires a power cycle of the autoloader and reconfiguration of the ISV software. If the autoloader is not power cycled:

■ The changes will not occur.

■ The front panel red LED flashes and displays a "Please power cycle" message.

When the I/E slot is enabled, Slot 16 is designated as the I/E slot, when two magazines are present.

Web Administration

Many of the same operations performed from the front panel can also be performed remotely using Web Administration.

The following browsers are recommended for use with Web Administration:

- Windows®
  — Internet Explorer 5.0, 5.5, and 6.x
  — Netscape 4.x and 6.x
- Linux, Unix®, and Sun Solaris™ 8
  — Netscape 4.x and 6.x

After establishing a connection to the autoloader, open the HTML browser and enter the IP address of the autoloader. (See "Autoloader IP Address" or contact your web administrator.) Be sure that proxy server settings in your browser are disabled.
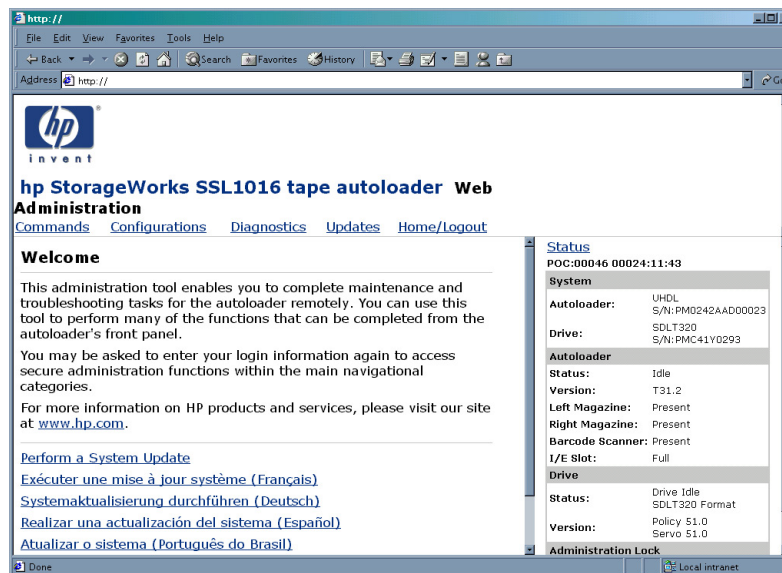
Figure 76: Web Administration Home Page

Default Password

The default user ID is guest. The default password is guest. See "Set Security Option" in this chapter for information on changing the user ID and password.

Status information appears on the right side of the home page and every page of Web Administration. The menu headings also appear at the top of every page. To access the functionality under the menu heading, click the menu heading. Web Administration prompts you for your username and ID, then displays the opening page for that menu.

The Configuration page includes a submenu on the left side of the page. When Web Administration displays the first Configuration page, it is open to the Systems Operations submenu. You can click **Networking** to access Ethernet settings options, and **Security** to access security settings options.
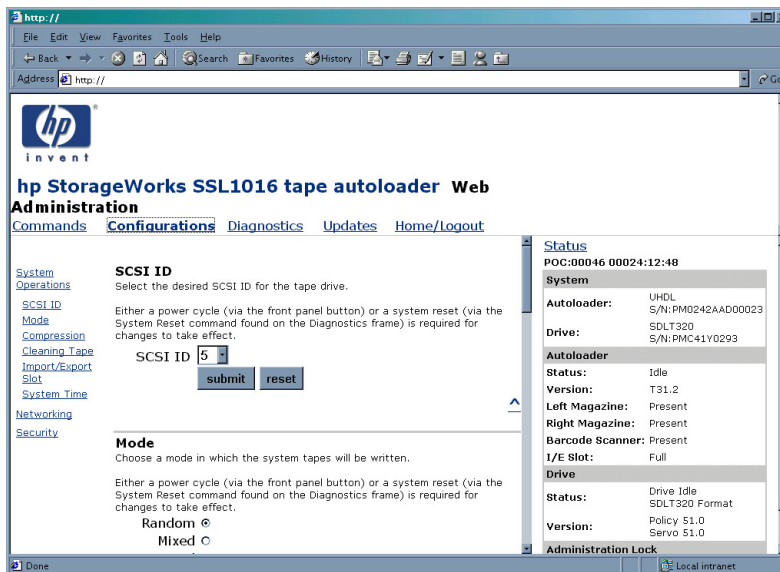
Figure 77: Configuration Page

Usually, after you have set the options, you click a **Submit** button to implement the new settings. Next to all **Submit** buttons is a **Reset** button. The **Reset** button does not reset the autoloader to its default settings, it just clears the settings in the option so that you can change them.

View Status Information

To view status information from Web Administration, you only have to open it.
You do not need to execute any command to see it because the status information
appears on the right side of every page. This information is updated automatically
every 10 seconds, so the status you see is real-time information.

Move Tapes

To move a tape:

1. On any Web Administration page, click **Commands**.

2. From the drop-down menu under Move tape from:, select the current location
   of the tape you want to move.

Note: You can also click the slot on the graphic to select it.

---

3. From the drop-down menu under To:, select the location to which you want to
   move the tape.

4. Click **submit**.
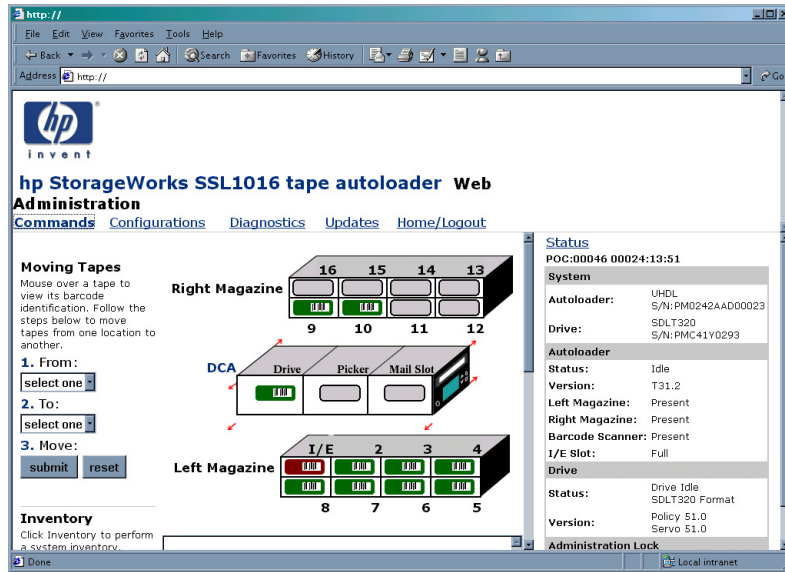
Figure 78: Moving tapes using Web Administration

Run Inventory

The autoloader automatically runs an inventory when you power it back on or insert a magazine. If you need to run an inventory in addition to this, you can use Web Administration to do it remotely.

To run an inventory:

1. On any Web Administration page, click **Commands**.

2. On the Commands page, click **Inventory**.

Set to Home

If the autoloader is not able to successfully execute a move or inventory command, try executing a HOME command and then retry the move or inventory command again.

The HOME command resets the autoloader as a means to help the autoloader recover from an unknown internal condition. You should very rarely need to use this command.

To set to Home:

1. On any Web Administration page, click **Commands**.

2. On the Commands page, click **Home**.

Run Diagnostic Tests

If the status information indicates an error, view the event log.

To view the event log:

1. On any Web Administration page, click **Diagnostics**.
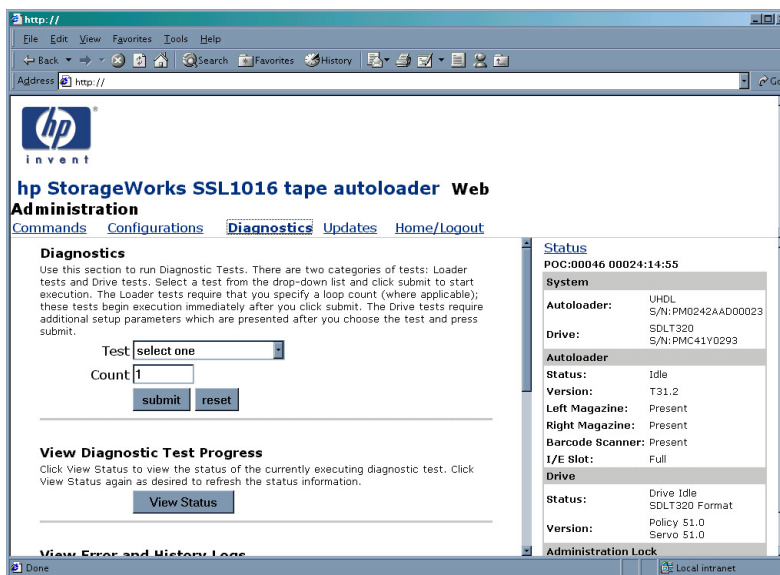
Figure 79: Diagnostic page

2. Click **View Log**.

Note: See Chapter 6, "Troubleshooting," for a list of error messages.

When an error message appears in the status information, you may need to run a diagnostic test.

To run a diagnostic test:

1. On any Web Administration page, click **Diagnostics**.
2. From the Test drop-down menu, select the diagnostic test that you want to run.
3. Click **submit**.

4. While the test is running, you can view the status of the test by clicking **View Status**. To refresh the status information, click the **Back** button on your browser, and then click the **View Status** button again.

5. To save the report, click **File**, **Save As**, then navigate to the directory where you want it saved.

Set the System Time

If your autoloader is not connected to a time server, you can set the time manually with Web Administration.

Note: The DLT1 and SDLT autoloaders do not have a battery so if time is manually set, it is lost and needs to be reset whenever the autoloader is power cycled.

Enter the time zone first, then the date and time. If you want to include time changes, such as daylight savings time, you must set those manually when they occur.

To set the time zone:

1. On any Web Administration page, click **Configurations**.

2. From the first drop-down list next to Time Zone, select the number of hours' difference between your local time and Greenwich Mean Time (GMT).

3. From the second drop-down list next to Time Zone, select the number of minutes' difference between your local time and Greenwich Mean Time (GMT).

4. Click **submit**.
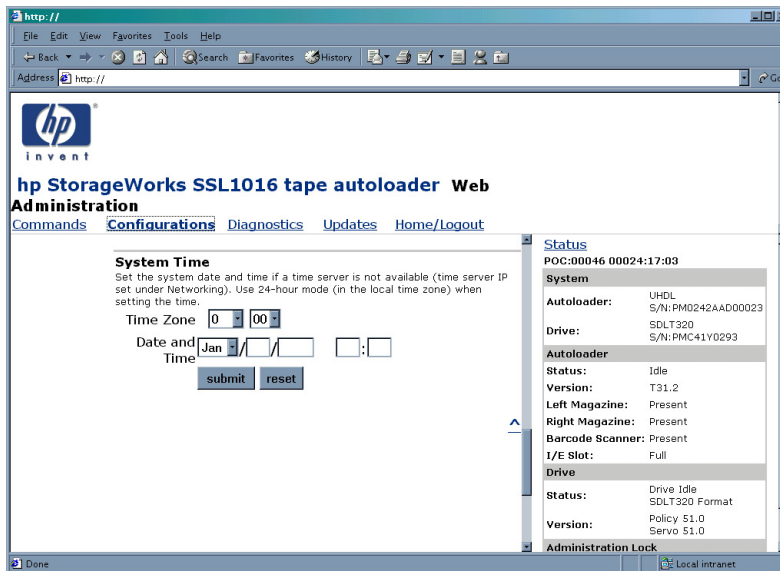
Figure 80: Setting system time

To set the date and time:

1. On any Web Administration page, click **Configurations**.

2. From the month drop-down list, select the current month.

3. From the day drop-down list, select the current day.

4. From the year drop-down list, select the current year.

5. In the hour text box, type the current hour, in 24-hour format.

6. In the minute text box, type the current minute.

7. Click **submit**.

Change the SCSI ID

If you need to change the autoloader's SCSI ID, you can do so from the Web Administration tool.

To change the SCSI ID:

1. On any Web Administration page, click **Configurations**.

2. From the drop-down list under SCSI ID, click the number to which you want to set the ID.
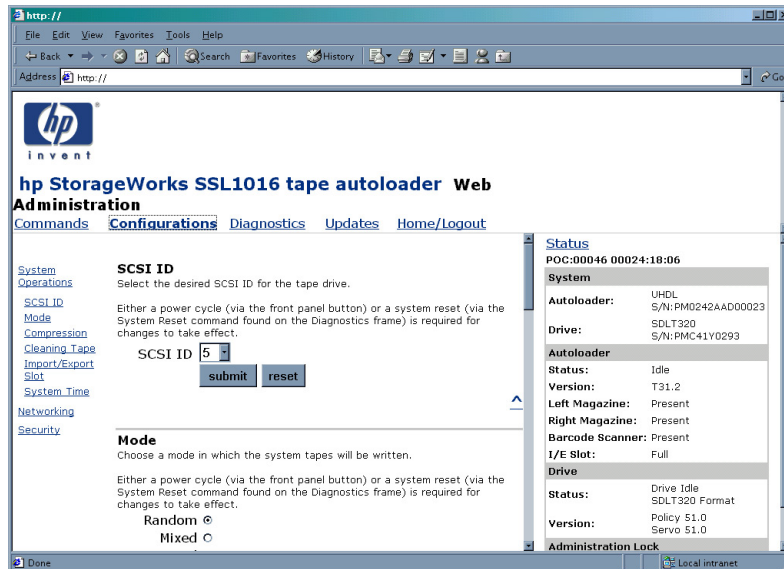
Figure 81: Setting the SCSI ID

3. Click **submit**.

You must reboot the autoloader before the new SCSI ID takes effect.

Note: For the Ultrium 460 autoloader you must set two SCSI IDs; one for the autoloader and one for the tape drive. The default SCSI ID for the autoloader is 4. The default SCSI ID for the tape drive is 5.

Set the Control Mode

To set the control mode:

1. On any Web Administration page, click **Configurations**.

    Under Mode, the current mode is selected.
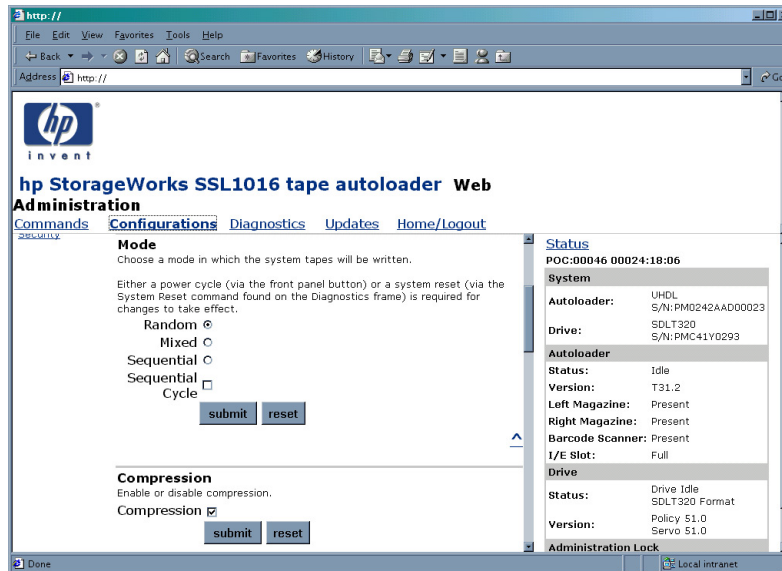
Figure 82: Setting the Control Mode

2. To change the mode, click a different option.

3. Click **submit**.

You must reboot the autoloader before the new mode takes effect.

Set the Compression

> **Note:** Typically you will want to leave this option enabled unless you are backing up data that is already compressed. Attempting to compress compressed data can reduce performance and increase data size.

To set the compression:

1. On any Web Administration page, click **Configurations**.

2. If a checkmark appears in the box next to Compression, compression is enabled. To disable compression, click the box to remove the checkmark.

3. If no checkmark appears in the box next to Compression, compression is disabled. To enable compression, click the box to enter a checkmark.

4. Click **submit**.
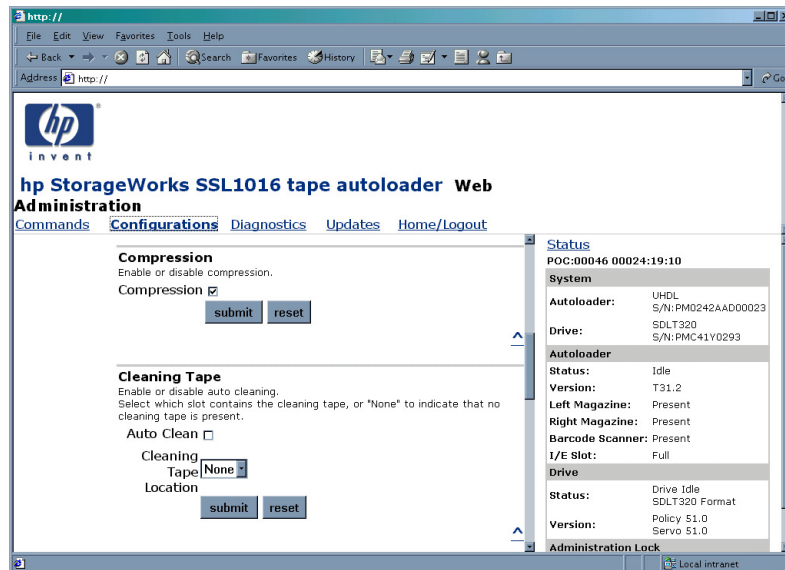
Figure 83: Setting the compression

Set the Cleaning Mode

To enable the Auto Clean function, you must have a slot designated for the cleaning tape cartridge. If you or another user have already designated a slot, that slot's number appears next to Cleaning Cartridge Location. If a slot has not been designated, the box is empty.

Note: Auto Clean is not supported on Windows 2000 removable storage.

To set the cleaning tape slot:

1. On any Web Administration page, click **Configurations**.
2. From the drop-down list next to Cleaning Cartridge Location, select the number of the slot in which you want to store the cleaning cartridge.
3. Click **submit**.
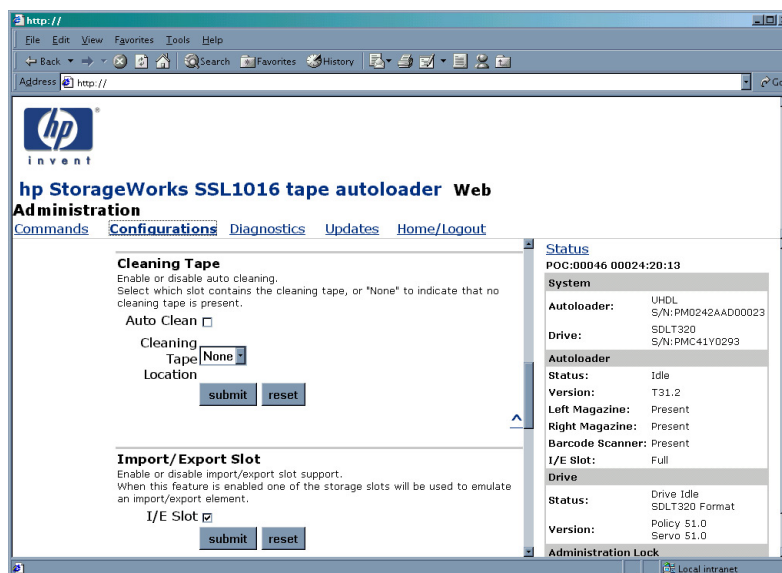
Figure 84: Cleaning Tape

If you want to set the Auto Clean option, use the following procedure. To clean the tape drive manually, use the Move function to load and unload the cleaning tape from the tape drive.

To set Auto Clean:

1. On any Web Administration page, click **Configurations**.

2. If a checkmark appears in the box next to Enable Auto Clean, the option is enabled. To disable Auto Clean, click the box to remove the checkmark. If no checkmark appears in the box next to Enable Auto Clean, the option is disabled. To enable Auto Clean, click the box to enter a checkmark.

3. Click **submit**.

Note: A cleaning tape should be present in the cleaning tape slot to configure Auto Clean. When Auto Clean is turned off, the cleaning tape is ejected to the mailslot.

Set the Import/Export Slot

To set the I/E slot:

1. On any Web Administration page, click **Configurations**.

2. If a checkmark appears in the box next to I/E Slot, the I/E slot is enabled.

3. If no checkmark appears in the box next to I/E Slot, the I/E slot is disabled.

4. Click **submit**.
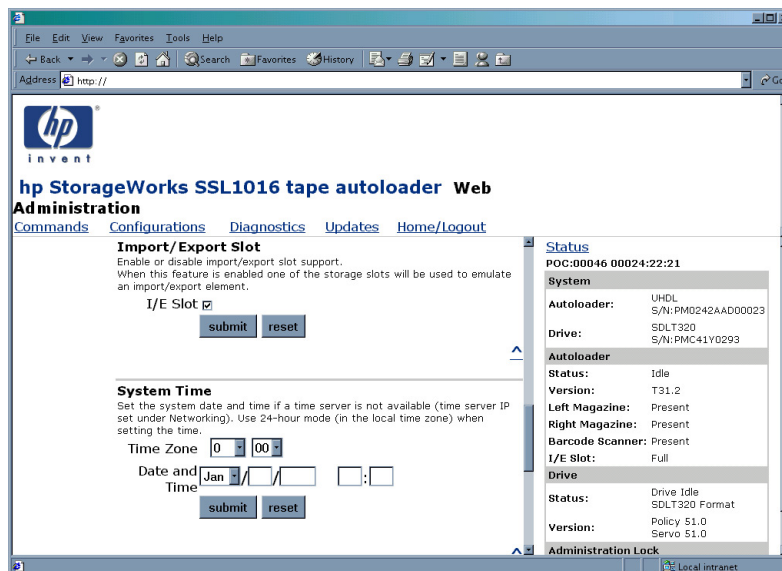
Figure 85: Import/Export Slot

Any change requires a power cycle of the autoloader and reconfiguration of the ISV software. If the autoloader is not power cycled:

■ The changes will not occur

■ The front panel red LED flashes and displays a "Please power cycle" message

When the I/E slot is enabled, Slot 16 is designated as the I/E slot.

Set Ethernet Configurations

When you originally installed the autoloader, you set the Ethernet connections through the front panel. However, you can change them through the Web Administration tool.

To change the Ethernet configurations:

1. On any Web Administration page, click **Configurations**.

2. On the secondary menu, click **Networking**.

    The current settings appear on the screen.
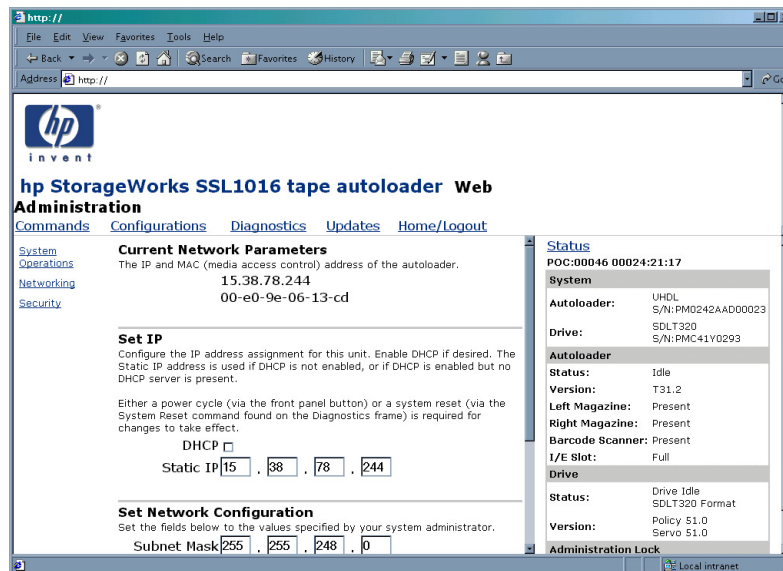
Figure 86: Networking options

3. If a checkmark appears in the box next to DHCP, the dynamic IP address option is enabled. To set a permanent IP address:

    a. Click the box to remove the checkmark.

    b. In the IP address fields, type in the new address, using your Tab key to move from box to box.

4. If no checkmark appears in the box next to DHCP, the permanent IP address option is enabled. To change a permanent IP address, in the IP address fields, type in the new address, using your Tab key to move from box to box.

5. To set the IP address from a permanent address to a dynamic address, click the box next to DHCP, and delete the IP address from the IP address fields.

6. To change the IP address of the subnet mask, gateway, SNMP server, or the time server:

   a. Click the box to left of the address you want to change to enter a checkmark.

   b. Type in the new address, using your Tab key to move from box to box.

7. Click **submit**.

Note: If the preceding steps change the IP address, the new address must be entered into the browser to continue using the Web Administration feature.

Set Security Option

When you enable the security option, users must enter a password to access the autoloader's functionality. A password allows either administrator-level access or operator-level access. (For more information on levels of password-protection, see "Security.")

To set the security option:

1. On any Web Administration page, click **Configurations**.

2. On the secondary menu, click **Security**.
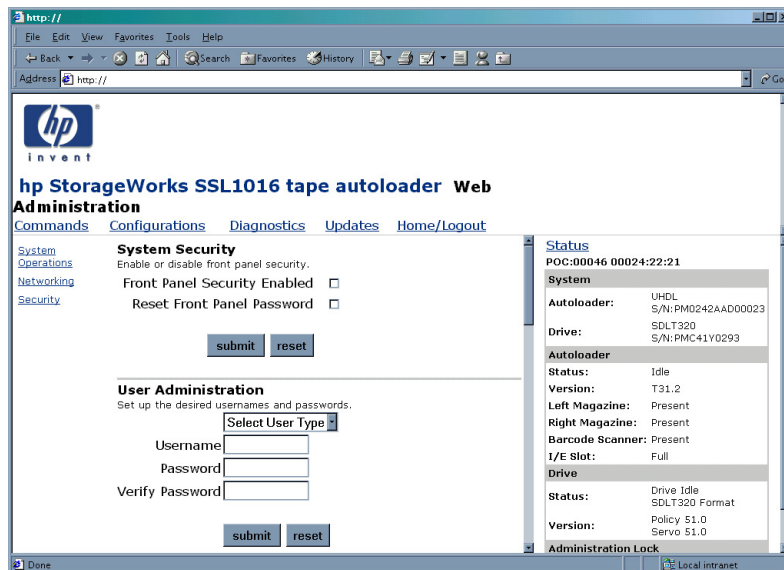
Figure 87: Security option

3. If a checkmark appears in the box next to Security, the security option is enabled. To disable the security option, click the box to remove the checkmark. If no checkmark appears in the box next to Security, the security option is disabled. To enable the security option, click the box to enter a checkmark.

4. Click **submit**.

Set Passwords

When you enter your password on the autoloader front panel, there is no associated username. However, when you click any menu heading on the Web Administration's home page, Web Administration prompts you for a username and password.

In Web Administration, you can set up to four usernames and IDs, which can include both alpha and numeric characters. Usernames and IDs must be between four and seven characters long.

To set a password:

1. On any Web Administration page, click **Configurations**.
2. On the secondary menu, click **Security**.
3. From the drop-down list next to User Type, select Administrator or Operator.
4. In the Username field, enter a username.
5. In the Password field, enter the password.
6. In the Verify Password field, re-enter the password.
7. Click **submit**.

You can reset the operator password for the front panel from Web Administration. However, you cannot reset the front panel administrator password this way.

To reset the front panel operator password:

1. On any Web Administration page, click **Configurations**.
2. On the secondary menu, click **Security**.
3. Click the box next to Reset Front Panel Password. A checkmark appears.
4. Click **submit**.

Update the Firmware

To update the firmware:

1. On any Web Administration page, click **Updates**.
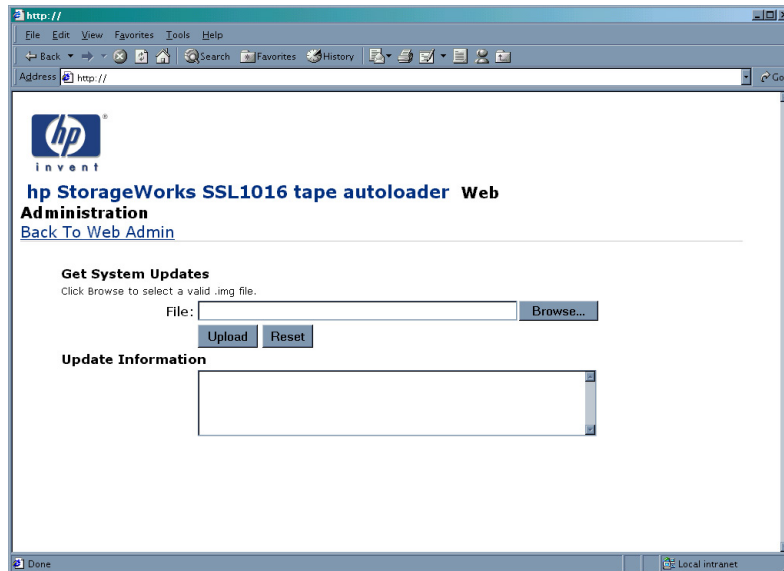
Figure 88: Get system updates

2. Click **Browse**.
3. Navigate to the location of the firmware update.
4. Click **Submit**.

The autoloader automatically uploads the new code and updates the firmware.

Note: A message displays on the LCD to indicate that the update is complete. Do not power cycle the autoloader until this message displays.

Tape Drive Cleaning

5

Your tape drive read/write head should be cleaned periodically. When cleaning is needed, the drive automatically requests the backup software to perform a cleaning operation. However, you can also initiate cleaning from the front panel as needed.

Use a cleaning tape to clean your tape drive.

■ The DLT1 tape cleaning tape looks just like a DLTtape IV cartridge, except that its shell is beige and has a stop next to the door hinge to prevent insertion in a non-compatible drive.

■ The SDLT cleaning tape is gray.

■ The Ultrium cleaning tape is orange.

Note: See Chapter 3, "Tape Cartridge Usage," for a list of compatible cleaning cartridges and part numbers.

Configuring the Cleaning Tape Location

Before inserting the cleaning tape you must configure the cleaning tape location.

1. On the main menu, scroll to Configuration.
2. Press **Enter**.
3. Scroll to Cleaning Tape.
4. Press **Enter**.
5. Log in as Administrator.
6. Scroll to Cleaning Tape Location.
7. Press **Enter**.
8. Select an available slot (no * next to the slot number).

9. Press **Enter**.

   The selected slot has a ! next to the slot number.

10. To deconfigure the slot, press **Enter** again.

    The selected slot no longer has a ! next to the slot number.

Inserting the Cleaning Tape

There are two methods for inserting the cleaning tape:

■ Load the cleaning tape directly into an ejected magazine and then reload the magazine.

■ Insert the cleaning tape through the mailslot.

To insert the cleaning tape through the mailslot:

1. On the main menu, scroll to Command.

2. Press **Enter**.

3. On the Command submenu, scroll to Cleaning Tape.

4. Press **Enter**.

5. Log in as Operator.

6. On the Cleaning Tape submenu, scroll to Enter Cleaning Tape.

7. Press **Enter**.

   A countdown appears on the LCD. You have 20 seconds to insert the cleaning tape through the mailslot before it relocks. Push the cartridge in. When prompted, press **Enter**. The system accepts the tape. If you try to load a cleaning tape through the mail slot without having configured a cleaning slot, the autoloader rejects the tape.

8. Once you insert the cleaning tape through the mailslot, do one of the following:

   ■ Proceed directly to manual cleaning.

   ■ Store the cleaning tape in a magazine slot to be used later.

Storing the Cleaning Tape

When you store the cleaning tape, you can use it in the following ways:

■ Use it for manual cleaning.

■ If the Auto Clean function is enabled, the autoloader can move the cleaning tape from the magazine slot to the tape drive and, after the cleaning cycle, return it to its slot.

■ If backup software cleaning function is enabled, the software can move the cleaning tape from the magazine slot to the tape drive and, after the cleaning cycle, return it to its slot (for more information, see your backup software's documentation).

To store the cleaning tape:

1. After you have inserted the tape through the mailslot into the drive for cleaning, on the main menu, scroll to Configuration.

2. Press **Enter**.

   The Configuration submenu appears.

3. On the submenu, scroll to Cleaning Tape Location.

4. Press **Enter**.

5. Log in as Administrator.

   A map of all the magazine slots appears.

Note: When a map of the magazine slots appears on the display, an asterisk (*) indicates a slot occupied by a data cartridge, a (@) indicates a slot occupied by a cleaning cartridge, and an (!) indicates an empty slot designated as cleaning slot.

Slot 1	Slot 2*	Slot 3*	Slot 4*
Slot 5	Slot 6	Slot 7*	Slot 8*
Slot 9	Slot 10*	Slot 11*	Slot 12*
Slot 13*	Slot 14*	Slot 15*	Slot 16!

Figure 89: Magazine slot map

6. Scroll to the slot where you want to store the cleaning tape.

Note: If you store the cleaning tape, you must specify in which slot the tape is to be stored.

---

7. Press **Enter** to unload the cleaning tape from the drive.

The autoloader moves the tape to its new location.

Ejecting the Cleaning Tape

You need to eject the cleaning tape from the autoloader under the following conditions:

■ If you do not want to store the cleaning tape in a magazine slot after manually cleaning the tape drive.

■ If the cleaning tape has expired.

A cleaning tape cartridge can be used for 20 cleanings.

To eject a cleaning tape:

1. On the main menu, scroll to Command.

2. Press **Enter**.

3. On the Command submenu, scroll to Cleaning Tape.

4. Press **Enter**.

5. Log in as Operator.

6. On the Cleaning Tape submenu, scroll to Eject Cleaning Tape.

7. Press **Enter**.

The autoloader ejects the cleaning tape from the mailslot.

Tape Drive Cleaning Methods

You can clean your tape drive in three ways:

■ Manual Cleaning

■ Auto Clean

■ Software

Manual Cleaning

If neither Auto Clean nor the backup software's cleaning option are enabled and the drive requires cleaning, the autoloader displays a cleaning message on the LCD.

⚠ **Caution:** Because the cleaning cartridge is abrasive, you should not use it unless the cleaning message appears.

To clean the tape drive manually:

1. On the main menu, scroll to Command.

2. Press **Enter**.

3. On the Command submenu, scroll to Cleaning Tape.

4. Press **Enter**.

5. Log in as Operator.

6. On the Cleaning Tape submenu, scroll to Load to Drive.

7. Press **Enter**.

   The autoloader moves the cleaning tape from its slot to the tape drive and then cleans the drive with it. When the cleaning is finished, you must return the cleaning tape to its magazine slot.

8. On the main menu, scroll to Command.

9. Press **Enter**.

10. On the Command submenu, scroll to Cleaning Tape.

11. Press **Enter**.

12. Log in as Operator.

13. On the Cleaning Tape submenu, scroll to Unload from Drive.

14. Press **Enter**.

    The autoloader removes the cleaning tape from the tape drive.

15. When you have finished manually cleaning the tape drive, do one of the following:

    ■ Store it to its magazine slot (see "Storing the Cleaning Tape").

    ■ Eject the cleaning tape from the autoloader (see "Ejecting the Cleaning Tape").

Auto Clean

> **Note:** Auto Clean is not supported on Windows 2000 removable storage.

The Auto Clean function permits the autoloader to perform the cleaning process automatically without interrupting normal operation. The Auto Clean feature is turned off by default.

With Auto Clean enabled, the autoloader monitors the cleaning requirements of the tape drive. When the drive indicates a Cleaning Required status, the autoloader automatically removes the cleaning cartridge from its slot and inserts it into the tape drive. After completing the cleaning cycle, the autoloader returns the cleaning cartridge to its slot.

When Auto Clean is enabled, the autoloader automatically cleans the tape drive when a Cleaning Required status occurs. During the cleaning cycle, the LCD displays messages indicating the progress of the process:

- Loading Cleaning Cartridge. The autoloader is loading the cleaning cartridge from its magazine slot into the tape drive.
- Cleaning Drive. The cleaning cartridge is running in the tape drive.
- Unloading Cleaning Cartridge. The autoloader is returning the cleaning tape to its magazine slot.

> **Note:** If you enable Auto Clean, make sure the cleaning option in your backup software is turned off.

Before you enable the AutoClean option, you must designate which slot contains the cleaning cartridge and load the cleaning cartridge into that slot. If you have not done this, the autoloader will not allow you to enable Auto Clean.

To set Auto Clean:

1. On the main menu, scroll to Configuration.
2. Press **Enter**.
3. On the Configuration submenu, scroll to Cleaning Tape.
4. Press **Enter**.
5. Log in as Administration.

6. On the Cleaning Tape submenu, scroll to Auto Clean On/Off.

   If Auto Clean is enabled, the menu item appears as Auto Clean On. If Auto Clean is disabled, it appears as Auto Clean Off.

7. To change the setting, press the up or down scroll key once.

8. Press **Enter**.

Software

Set the cleaning option in your software application (if available) so that the software monitors drive cleaning. If your application software supports automatic cleaning, store a cleaning cartridge in the slot specified by the application.

Note: If automatic cleaning is enabled in your application software, make sure the Auto Clean option is disabled on the autoloader either via the LCD front panel or Web Administration.

Troubleshooting

6

Before Contacting Technical Support

Before you contact technical support, use the information in this chapter to try and resolve the problem.

Problems with the autoloader can occur in the following forms:

■ Operational Problems

■ Error Messages

Operational Problems

Operational problems can range from compatibility issues with the operating system to failure of the front panel. Table 13 describes the probable cause and suggested action for each operational problem you may encounter.

Table 13: Suggested Actions for Operational Problems

Problem	Probable Cause	Suggested Action
Front Panel does not display information.	The connection to the LCD has failed.	Use the Web Administration tool to troubleshoot the error.
	The autoloader did not power up.	See, "Autoloader does not power up."
	The LCD has failed.	Replace the chassis assembly.
Autoloader is operating slowly.	The autoloader is incorrectly configured for the operating system.	Go to the HP support website for compatibility requirements: http://www.hp.com
Drive is operating slowly.	Drive head is dirty.	If the cleaning light is also on, clean the drive.
	Media is worn out.	Try a new tape and discard the older media.

Table 13: Suggested Actions for Operational Problems

Problem	Probable Cause	Suggested Action
	Backup server isn't capable of sending data to the drive fast enough.	For the SDLT and Ultrium drives, the backup server needs to have lots of memory, processing power, a dedicated SCSI bus and a fast file system.
	Network issues.	Most networks aren't capable of sending data fast enough to the SDLT and Ultrium drives. Therefore multiple network streams of data must be used for backups (concurrency.) Also look for high network traffic, which can affect backup/restore performance.
	SCSI issues.	Check termination, and cable length. Use LVDS SCSI and don't connect any Single-Ended devices or terminators on the same bus as the autoloader. Ultra 160 is recommended for Ultrium 2 performance.
	Backup software isn't configured optimally.	Make sure that the backup software is configured for the best performance. (Block size at 64 and turn software compression off).
	Data set is impairing performance.	The following can lower performance: lots of small (<64k) files, fragmentation, and uncompressible data.
Real Time Clock keeps getting reset/cleared.	The DLT1 and SDLT autoloader versions cannot maintain the clock when power is off.	Since the DLT1 and SDLT versions can not maintain power to the clock when power is off or the autoloader is reset, it is recommended to configure these autoloaders to connect to a time server instead of manually setting the clock.

Table 13: Suggested Actions for Operational Problems

Problem	Probable Cause	Suggested Action
Autoloader does not power up.	The power cord or source is malfunctioning or the autoloader is incorrectly configured.	Check all outlets and power cords for proper connection.
	The power switch on the back of the autoloader is set to 0.	Flip the power switch on the back of the autoloader back to the | position and, if necessary, press the power button on the front of the autoloader.
	The DCA is not fully seated.	Reseat the DCA to ensure a good connection to the chassis assembly.

Error Messages

Failures can occur while operating the autoloader. They prevent the autoloader from completing a specific action. When a failure occurs, two things can happen:

- No error message appears, but the autoloader fails to complete the action. If no message appears, you will need to call a service representative to troubleshoot the problem.

- An error message appears on the front panel or Web Administration. If an error message appears, follow the procedures listed in Table 14 to try and resolve the problem.

Understanding Error Messages

When a failure first occurs, a two-digit error message appears on the front panel of the autoloader. See Table 14 for the error description and suggested repair.

When viewing the error log from the front panel, the text that appears is similar to the following:

```
Task: Picker
Error: 02b9202f
Contxt: 03ac/00400100
POC: 00022
POH: 00000:07:41: #14
```

Find the eight characters following "Error:" in the second line of the block of text. The third and fourth digits are the error code. In the example above, the error code is b9. In Table 14, you will see that this is an error event related to the picker.

Note: POH is the time of the error with an assigned number. The higher the error number is, the more recent it is.

If you need to view an error log from Web Administrator, the text that appears is similar to the following:

```
0014: PC: 00022 POH: 00000 : 07 : 41 Error: 02b9202f, Context: 03ac/00400100
      070d02c7 : a70dfd3a : 0708000a : 00000000
      00000000 : 00000000 : 00000000 : 00000000
      00000000 : 00000000 : 00000000 : 00000000
```

Find the eight characters following "Error:" in the first line of the block of text. The third and fourth digits are the error code. In the example above, the error code is b9. In Table 14, you will see that this is an error event related to the picker.

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Table 14: Error Messages

Error Message	Description	Suggested Repair
00 - 25	General software flags	■ Power cycle the autoloader and run the Health test. ■ Check HP website for firmware updates.
26	Message Send ID error	■ Check SCSI Bus cables and terminators. ■ Make sure the host bus adapter is installed, detected, and configured properly. ■ Power cycle autoloader. Repeat checks after power cycle.
27	Message bad	■ Check SCSI bus cables and terminators. ■ Make sure the host bus adapter is installed, detected, and configured properly. ■ Power cycle autoloader. Repeat checks after power cycle.
28	Message parameter bad	■ Check host device driver. ■ Make sure the software application is supported, has the autoloader correctly configured, and has the latest patches installed. ■ Check SCSI bus cables and terminators. ■ Make sure the host bus adapter is installed, detected, and configured properly. ■ Power cycle autoloader. Repeat checks after power cycle.
29	Invalid element	■ Check host device driver. ■ Make sure the software application is supported, has the autoloader correctly configured, and has the latest patches installed. ■ Power cycle autoloader. Repeat checks after power cycle.

Table 14: Error Messages

Error Message	Description	Suggested Repair
2A	Invalid element status	■ Check host device driver. ■ Make sure the software application is supported, has the autoloader correctly configured, and has the latest patches installed. ■ Power cycle autoloader. Repeat checks after power cycle.
2B-2F	Firmware tables and stacks invalid	■ Power cycle the autoloader and run the Health test. ■ Update firmware. ■ Change position of the firmware jumper to enable secondary firmware image: 1. Remove the DCA. (See Appendix D for instructions.) 2. Change the jumpers on the front of the DCA from vertical to horizontal or horizontal to vertical. 3. Install the DCA. 4. Power on the autoloader and, if necessary, attempt a firmware upgrade.
30	Post Failure	■ Verify that the DCA and magazines are properly seated. ■ Power cycle the autoloader.
31 - 38	System Monitoring type events	■ Power cycle the autoloader and run the Health test. ■ Check HP website for firmware updates.
39	Offline	No action required.
3A	Door locked	No action required.
3B	Open front	■ Install magazine or magazine blank. ■ Try a different magazine or magazine blank.

Table 14: Error Messages

Error Message	Description	Suggested Repair
3C	Over temp	■ Verify that room temperature is within specifications. ■ Check that there is adequate clearance for airflow. ■ Clear debris from any openings of the autoloader, both in the front and the back. ■ Verify that both fans are working. If fans are bad, contact HP customer support. ■ Power off the autoloader and allow it to cool.
3D	Drive error	Try a different piece of media. If that also fails, contact HP customer support.
3E	Load error	■ Verify you are using the correct type of media. ■ Verify cartridge does not have labels or other matter placed anywhere on the cartridge except where labels are expected to be placed. ■ Try to load a different piece of media. If multiple pieces of media fail, contact HP customer support.
3F	Unload error	■ Verify cartridge does not have labels or other matter placed anywhere on the cartridge except where labels are expected to be placed. ■ Try to load a different piece of media. If multiple pieces of media fail, contact HP customer support.
60 - 69	Internal communication events	Power cycle the autoloader.
A0 - A4	Picker servo errors	■ Run Picker test. ■ Run Health test. ■ If problem continues, power cycle the autoloader and repeat the tests.

Table 14: Error Messages

Error Message	Description	Suggested Repair
A5	Source element empty	■ Verify that the expected source really does have a cartridge.
		■ Run the Health test.
		■ If the source is a magazine, replace the cartridge in that slot with a different cartridge and try again. If error continues, replace the magazine.
		■ If source is the tape drive, verify the tape drive has a cartridge and it was ejected.
		■ Power cycle the autoloader.
		■ If error continues, contact HP customer support.
A6	Source magazine missing	■ Verify the magazine is installed correctly into the autoloader.
		■ Remove and insert the magazine again.
		■ Run the Health test.
		■ Try a different magazine or magazine blank.
		■ Power cycle the autoloader.
		■ Replace the magazine.
A7	Destination magazine missing	■ Verify the magazine is installed correctly into the autoloader.
		■ Remove and insert the magazine again.
		■ Run the Health test.
		■ Try a different magazine or magazine blank.
		■ Power cycle the autoloader.
		■ Replace the magazine.

Table 14: Error Messages

Error Message	Description	Suggested Repair
A8	Destination element full	■ Verify the expected destination really does not have a cartridge. ■ If destination is a magazine, install and remove a cartridge from the selected slot and try again. If error continues, replace the magazine. ■ If destination is the tape drive verify the tape drive does not have a cartridge. ■ If a cartridge is in the mailslot opening, remove it and verify that the mailslot door is closed. ■ Power cycle the autoloader. ■ Set the autoloader to Home using Web Administration, Command page. ■ Run the Health test. ■ If error continues, contact HP customer support.
A9	Picker full	■ Look in the front of the autoloader and confirm the picker is full. ■ Power cycle the autoloader. ■ Run the Health test. ■ Set the autoloader to Home using Web Administration, Command page. ■ Contact HP customer support if the problem continues and prevents normal operations.
AA	Picker cartridge sensor error	■ Perform picker test. ■ Perform the Health test. ■ If problem prevents the test from running, contact HP customer support.
AB	Drive path sensor error	■ Run the Health test. ■ Power cycle the autoloader.
AC	Mail slot door sensor error	■ Insert a cartridge into the autoloader via the mail slot. ■ Power cycle the autoloader.

Table 14: Error Messages

Error Message	Description	Suggested Repair
AD	Mail slot solenoid error	■ Insert a cartridge into the autoloader via the mail slot. ■ Power cycle the autoloader.
AE	Unknown servo error	Run the Health test.
AF	Error log information event	No action required.
B0 - BF	Error events related to the picker not rotating or translating correctly.	■ Run the Picker test. ■ Run the Health test. ■ Power cycle the autoloader.
C0	Unknown motor error	■ Run the Health test. ■ Power cycle the autoloader.
D0	Magazine solenoid bad	■ Remove and insert each magazine. ■ Try a different magazine, if possible. ■ Power cycle the autoloader.
D1	Magazine present sensor bad	■ Remove and insert each magazine. ■ Try a different magazine, if possible. ■ Power cycle the autoloader.

Table 14: Error Messages

Error Message	Description	Suggested Repair
D2 - D4	Position sensor bad	■ Remove and insert each magazine. ■ Try a different magazine, if possible. ■ Power cycle the autoloader.
D5 - DE	Cartridge flags located on the magazine may be bad or the sensor to detect the flags may have a problem	■ Remove and insert each magazine. ■ Try a different magazine, if possible. ■ Power cycle the autoloader.
DF	Jammed cartridge	■ Look through the mail slot door and verify a cartridge is jammed. If a cartridge is jammed, power cycle the autoloader. ■ If a cartridge is still jammed, power down and unplug the autoloader. Remove the opposite magazine that is jammed. Carefully try to push the cartridge forward into the magazine slot. There may be a need to slightly rotate the picker to get the cartridge to move forward. Power back up, install the removed magazine and run the Health test. ■ If the cartridge cannot be unjammed, remove the SCSI, Ethernet, and power cables from the autoloader and remove the autoloader from the cabinet. With the autoloader resting flat on a table, remove the top cover and slide or remove the jammed cartridge. Reassemble the autoloader and prior to reinstalling the autoloader in the cabinet, run the Health test from the front panel. ■ If the same cartridge jams, remove it from the system as a bad cartridge. Verify there are no foreign labels or stickers on the cartridge. ■ If the autoloader always jams going to or from the same magazine, replace the magazine. ■ If jam is random, contact HP customer support.

If you still have a question after reading this guide, see "Getting Help," in the preface.

Diagnostic Tests

Table 15 lists the diagnostic tests.

Table 15: Diagnostic Tests

Test	Description
Halt	Cancels any currently running test.
Self	■ Checks the ability of the picker to properly rotate and translate. ■ Verifies that installed magazines function correctly.
Health	■ Verifies picker movement. ■ Verifies magazine movement. ■ Updates inventory. ■ Verifies ability to move cartridge to and from each magazine element. ■ Verifies drive communication and ability to move a cartridge to and from the drive. ■ Verifies that a cartridge can be moved to and from the mail slot.
Picker	■ Performs a full picker translation calibration. ■ Performs a full picker rotation calibration.
Magazine	■ Performs left and right magazine calibration. ■ Verifies successful slot movement.
Inventory	Takes a snapshot of the current labels recorded for each cartridge present, then performs and inventory and compares the new results to the snapshot.
Drive Read/Write	Performs a write of two full tracks of data followed by a read and if the drive is capable performs a compare on the data. Verifies the write/read statistics to determine if there is a write or read problem with the drive. **Caution:** Running this test may overwrite existing data on the tape. Do not use a tape containing current or critical data.

Regulatory Compliance Notices

A

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (that is, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Declaration of Conformity for products marked with the FCC logo - United States only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this FCC declaration, contact:

Hewlett-Packard Company
Regulatory Engineer, MS E-200
825 14th Street S.W.
Loveland, CO 80537

Or, call

(970) 898-1738

To identify this product, refer to the Part, Series, or Model number found on the product.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

$C\epsilon$

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

■   EN 55022 (CISPR 22) - Electromagnetic Interference

■   EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) - Electromagnetic Immunity

■   EN61000-3-2 (IEC61000-3-2) - Power Line Harmonics

■   EN61000-3-3 (IEC61000-3-3) - Power Line Flicker

■   EN 60950 (IEC 60950) - Product Safety

BSMI Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japanese Notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文を
お読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準
に基づくクラスB情報技術装置です。この装置は、家庭環境で使用すること
を目的としていますが、この装置がラジオやテレビジョン受信機に近接して
使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に
基づくクラスA情報技術装置です　この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

Electrostatic Discharge

B

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

■ Avoid hand contact by transporting and storing products in static-safe containers.

■ Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

■ Place parts on a grounded surface before removing them from their containers.

■ Avoid touching pins, leads, or circuitry.

■ Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

■ Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.

■ Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

■ Use conductive field service tools.

■ Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

Note: For more information on static electricity, or for assistance with product installation, contact your authorized reseller.

Specifications

<div style="text-align: right; font-size: 2em; color: #A01050; font-weight: bold;">C</div>

Physical Specifications

Table 16: Physical Specifications

Height	3.5 inches (8.89 cm)
Width	17.6 inches (44.70 cm)
Length	27.67 inches (70.28 cm)
Weight (without media)	50 lb (22.68 kg)

Performance Specifications

Table 17: Performance Specifications

Initialize element status	90 seconds (typical)
Mean cartridge cycle time	20 seconds
Mean cartridge load time	10 seconds
Avg load time (after placing cartridge in drive)	59 seconds (typical)
Max transfer rate	DLT1: 3 MB/sec (native) SDLT 320: 16 MB/sec (native) Ultrium 460: 30 MB/sec (native)
Maximum Storage Capacity	DLT1: 1280 GB (compressed) SDLT 320: 5120 GB (compressed) Ultrium 460: 6400 GB (compressed) **Note:** Assumes typical 2:1 compression of data. Actual compression may vary, depending on type of data being backed up.

Power Specifications

Table 18: Power Specifications

Line Voltage	**60 Hz system**: 90 to 265 VAC; **50 Hz system**: 90 to 135 VAC
Line frequency	47 Hz to 63 Hz
AC input current	**60 Hz system**: 6.0A (RMS) for 115VAC; **50 Hz system**: 3.0 A (RMS) for 230VAC
Power consumption	**60 Hz system**: 75W; **50 Hz system**: 80W
Line discontinuities: Voltage surges	+/- 500 volts at nominal line voltage Pulse width: 100 ns Rise Time: 5 ns Repetition Rate: 1 Hz Common and differential mode, positive and negative polarity
Line discontinuities: Voltage spikes	+/- 1.5 kV at nominal line voltage Pulse Width: 1 microsecond Rise Time: 25 ns Repetition rate: 1 Hz Common and differential mode, positive and negative polarity

Environmental Specifications

Table 19: Environmental Specifications

Temperature Range (Dry Bulb)	
Operating	+10°C to +35°C (+50°F to +95°F)
Non-operating	- 35°C to + 65°C (-31°F to +149°F)
Temperature Variation	
Operating	10°C (50°F) per hour
Non-Operating	20°C (68°F) per hour
Humidity	
Operating	20% to 80% non-condensing
Non-Operating	10% to 90% non-condensing
Gradient	10% per hour
Wet Bulb	
Operating	26°C (78.8°F) max
Non-Operating	29°C (84.2°F) max
Altitude	
Operating	-500 to 10,000 feet (-152 to 3,048 meters)
Non-Operating	-500 to 30,000 feet (-152 to 9,144 meters)

Acoustic and Noise Limits

Table 20: Acoustic and Noise Limits

Specification	Operating	Storage or Non-operating	Transportation
Acoustics	Idle: not to exceed 55 dbA Full operation: not to exceed 60 dBA	N/A	N/A

Safety and Regulatory

The autoloader carries the following Regulatory Agency product safety certifications.

Table 21: Regulatory and Product Safety Certifications

Description	Specification
UL Listed Mark	UL 1950 (standard for safety of information technology equipment)
TUV GS Mark (Germany)	EN60950, IEC950 (standard for safety of information technology equipment third edition)
CE Marking (European Union)	Low Voltage Directive, 72/23/EEC, European Union
CUL Mark (Canadian UL)	CAN/CSA 22.2 No. 950 (standard for safety of information technology equipment)
Regulatory Series ID Number	ED2000, Class B

Upgrading or Replacing the DCA

D

This appendix describes how to upgrade or replace the drive carrier assembly (DCA).

Configuration and Tools

If you replace or upgrade the autoloader DCA, you need to check settings for the DCA and the SCSI bus.

You will need a Phillips screwdriver to replace a DCA.

Removing a DCA

Before you replace the autoloader DCA, you must make sure the tape drive does not contain a cartridge. To unload a tape from the tape drive, see "Move a Single Cartridge" or "Eject a Single Cartridge" in Chapter 4.

You must also turn off power to the autoloader and disconnect the power and SCSI cables from the back of the DCA.

> ⚠ **Caution:** The DCA contains electronic sensitive components. Be sure to wear your wrist ground strap whenever handling the DCA.

To remove the DCA:

1. Power off the autoloader.

2. Disconnect all cords and cables from the back of the DCA.

3. Remove the four screws anchoring the DCA to the chassis.
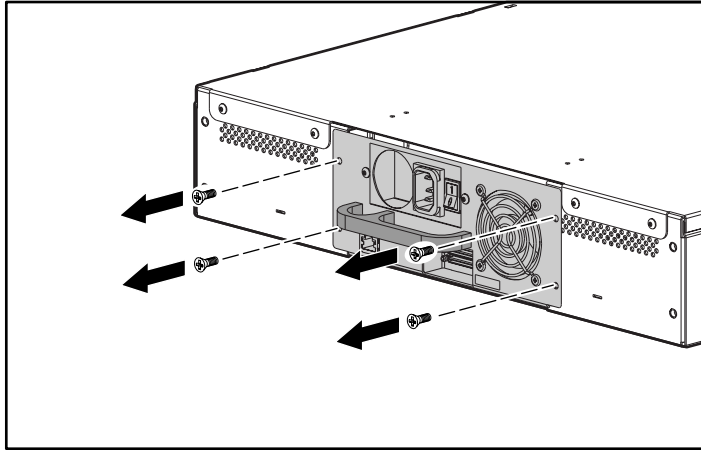
Figure 90: Removing the screws on the rear of the chassis

4. With one hand, grasp the DCA handle and slide it backward to remove. Being careful not to touch the exposed board on the bottom of the DCA, place your other hand under the DCA to support it and prevent it from falling.
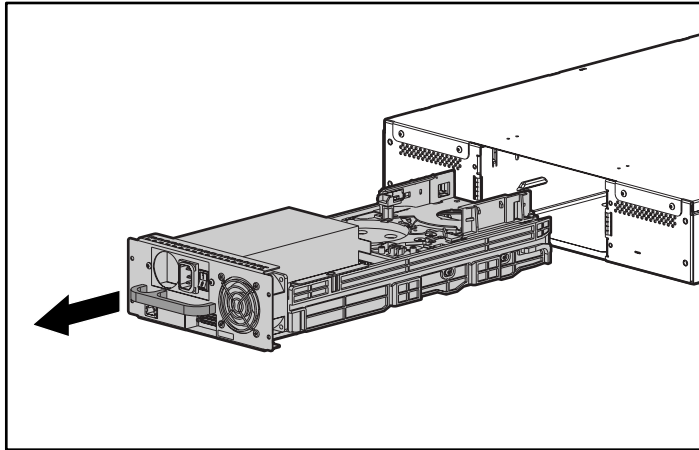
Figure 91: Removing the DCA

⚠️ **Caution:** Avoid touching the exposed board on the bottom of the DCA. See Figure 92.
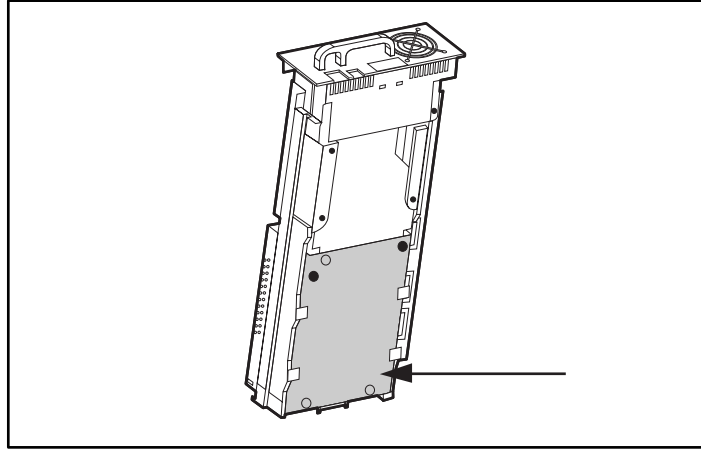
Figure 92: Bottom of DCA

Installing a DCA

To install a DCA:

1. Put on ground wrist strap and connect to appropriate ground.

2. Grasp the DCA by the handle with one hand and support it underneath with the other hand.

⚠ **Caution:** Avoid touching the exposed PCBA on the bottom of the DCA.

3. Slide the DCA into the DCA bay ❶. Make sure you position DCA correctly; it should slide smoothly.
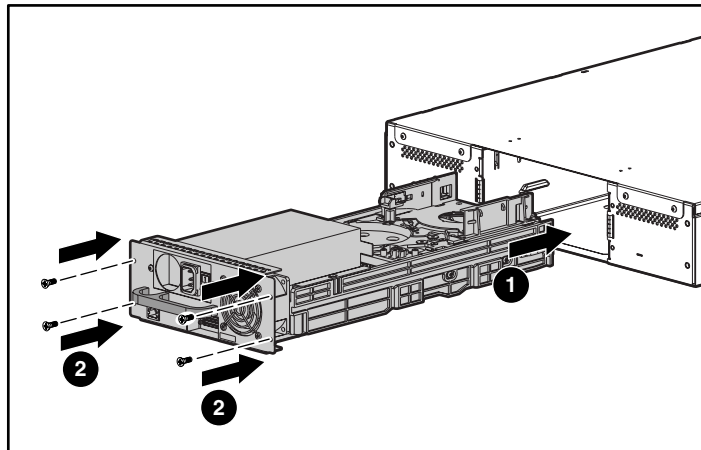
Figure 93: Installing the DCA

4. Install the four screws that secure the DCA to the chassis ❷. Tighten firmly.

5. Make sure the power switch on the back of the DCA is off (the 0 is pressed), then connect the power cord and SCSI cable.

6. On the power switch on the back of the DCA, press the | to power on the autoloader.

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